

# **COSMOLOGY AND HUMAN DESTINY**

**Impact of Sunspots on Earthly Events**

**OUR PAST AND FUTURE**

**PDFBOOKSFREE.PK**

**Sultan Bashir-ud- din Mahmood**

# **COSMOLOGY AND HUMAN DESTINY**

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Sultan Bashir Mahmood

# **COSMOLOGY AND HUMAN DESTINY**

Is an effort to open the so far closed door between the physics and the meta-physics. It is beginning of research work which, when developed could prove immensely beneficial to the human race to look into their future on earth and take big decisions with reference to the impact of cosmic factors on the working of their minds. It will help us to answer many questions concerning our daily life scientifically, such as, what to do? , when to do? , taking into consideration the impact of natural phenomena such as, charged particles, electro magnetic fields and cosmic radiations on our individual and collective behaviour. It will be more like weather forecasting and serve the human beings like wise. It is thus beginning of the new scientific vistas between physics and meta-physics and, an exciting topic of research for the young scientist. SBM rules, and findings, developed in this book are just a beginning.

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Title **COSMOLOGY AND HUMAN DESTINY**  
Impact of Sunspots on Earthly Events

Author Sultan Bashir Mahmood

Subject:

**A study about the impact of sunspots and solar storms on human beings, their attitudes and emotions; intellectual, social and political life; decisions, creativity, productivity and entrepreneurship etc. and consequently on the rise and fall of civilizations, great political and social upheavals, revolutions, technical and scientific developments, in the world with reference to the past 250 years history of mankind.**

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*I am grateful to my staff particularly Mr. Ishtiaq Ahmed, Mr. M Ashiq and Mr. Rafat Iqbal for computer setting and helping me in the arrangements for publication of this work.*

**Sultan Bashir Mahmood**



**The Author** with a distinguished career in the Pakistan Atomic Energy Commission, spread over a period of 35 years, has played a pioneering role in the development of nuclear technology in Pakistan. He is also author of numerous technical papers in the field of Nuclear Engineering, Quality Assurance, Transfer of Technology, Indignisation of high technologies and Project Management etc. He is a man of wide scholarly interests and deeply concerned about the well being of humanity. In 1987, he founded the Holy Quran Research Foundation in Islamabad dedicated to the understanding and assimilation knowledge about the Holy Quran. From its forum he has authored many books and papers on Islam with reference to scientific knowledge. He believes that the present Industrial civilization can only sustain itself long enough if it gives away its secular character, and reorganizes, itself on strong moral grounds.

As recognition of his outstanding achievements, he has been conferred the award of Sitara-I-Imtiaz by the President of Islamic Republic of Pakistan, Gold Medal of Honour by the U.S Historical Institute-USA; Gold Medal by the Pakistan Academy of Sciences.

## **A Unique Perspective on Terrorism**

Farhat Ullah Babar

Different explanations have been offered to explain why, despite a massive international war for the past several years, the end of terrorism does not seem to be coming any nearer.

General Musharraf says that the underlying causes of terrorism need to be understood, and then orders banning a few modaris. Prime Minister Tony Blair confesses that no security measures would preclude another terrorist attack. Afghan President Hamid Karzai says that terrorism will persist as long as governments employ extremism as a tool of power. President Bush thinks that the Americans are attacked because the “extremists are against our freedoms, democracy any ways of life”. Some identify terrorists with long flowing beards, white robes and green turbans – but the London bombers had none of those traits. Some believe that poverty and unemployment are the root cause, but offer no explanation as to why hundreds of millions of the destitute masses have not turned to terrorism.

Is there any other perspective from which terrorism may be seen and understood? Yes there is.

A science book, published towards the close of the last century, predicted terror activities on earth due mainly to increased emission of energy by our Sun. based purely on scientific data, the book predicted hyper human activity at the turn of the century characterized by wars and serious disturbances in human behaviour. Title, *Cosmology and Human Destiny: Impact of Sunspots on Earthly Events*, is no fiction; it is based on a scientific analysis of the Sun’s behaviour and its impact on human life.

It was first printed in Pakistan in 1998, barely a few months before Kargil – the mother of all misadventures which defied rational thinking, to the extent that it can only be explained as a serious disturbance in human behaviour and dangerous hyperactivity of its planners.

The book begins by stating the obvious about the Sun’s profound impact on mankind’s life on earth. As the source of all life, the Sun gives us our days and night, our weathers and our foods and fruits, it avers.

In 1610, scientists first discovered that occasionally some dark patches, called “sunspots”, appeared on the Sun’s surface. These patches indicated that some changes were taking place in the pattern of energy emitted by the Sun.

Two hundred years later, scientists observed a strange phenomenon. The Sun spots followed a mysterious and unexplained pattern, regularly appearing in a cyclic pattern of rise and fall. Scientists call this heightened solar activity “Sun storms”.

Several years ago, scientists were puzzled when some electric power stations in Canada and space satellites launched by the US suddenly and mysteriously failed. A deeper study revealed that these ghost-like events corresponded with the peaking of Sun storms. Investigations showed that during Sun storms, the energy released affected the

sensitive electronics computer chips and disrupted their operation. Study of Sun storms has become a serious subject of research and the US space agency NASA has now set up a Solar and Heliospheric Observatory (SOHO) in space to predict the Sun's activity and its impact on space flights.

If sun storms emitting protons and electrons affect sensitive computers in power plants, is there a possibility that it would also affect the human mind, which is also like a computer, by bombarding it with protons and electrons? The human brain is a complex electrical machine with billions of neurons carrying extremely small electrical currents. Do the solar storms, known for causing disruption in less complex computers, also cause similar disruptions in the human mind? The answer to the question, according to *Cosmology and Human Destiny*, is yes, they do.

The book has tabulated scientific data about Sun storms during the past 250 years when the first scientific data was collected in when the first scientific data was collected in 1755. It also scanned archives and history books for information about the nature of human activity during periods of solar storms.

The book has painstakingly gathered scientific data about Sun storms from 1750 to 1990 and juxtaposed it with laboriously researched major historical events during the period. It concluded that the human mind would behave irrationally due to Sun storms causing death and destruction on a phenomenal scale during the next decade or so.

It abounds in examples. Wars and destruction in the past have coincided with solar storms. When the sunspots were most numerous, in 1979, the Soviet Union attacked and occupied Afghanistan. The book also claims that the Soviet's 1989, defeat in Afghanistan coincided with another peak period of sunspots.

The dismemberment of USSR, unification of East and West Germany and the US-Iraq war, all corresponded with increased solar storms.

Going back in history, World War I broke out at the time of a sudden upsurge in sunspots in August 1913. Even the ups and downs in the War coincided with the months of higher solar activity in those turbulent years, or so the book says.

Furthermore, the book reminds, in 1938, an abnormal solar flare, speeding 450 miles per second, swept through the Sun's surface, beaming tremendous radiation charged particles and magnetic force towards the Earth. This period coincides with World War II and the Spanish Civil War. When the atom bomb was used against Japan, in August 1945, the Earth was so oriented that it was exposed to, the maximum to the Sun's magnetic field.

Basing itself on NASA's scientific reports, *Cosmology and Human Destiny* asserted that, beginning in 1998, the Sun would beam to, wards Earth a degree of energy never recorded in history. It warned, in 1998, against high levels of turbulence and turmoil. According to it, the world was to soon witness charged emotions, agitated minds and aggressive attitudes of mankind due to unprecedented solar storms.



Pakistan, India and countries of the region were served a particularly stern warning. I warned that Pakistan may witness a repeat in 1971-like events and pleaded, “The situation requires great caution and statesmanship both from the civil and military leaderships of the country”. Apparently, forewarned is fore armed.

And who is the author of this fiction-like scientific work on terror tendency? Not an astrologer or a stargazer; the author is a professional nuclear engineer of high caliber, who served the Pakistan Atomic Energy Commission for nearly four decades and has made great contributions in the field of Nuclear power development and enrichment.

**Senator (r) Farhat Ullah Babar**  
**Writer and Free Lance Correspondent**

**COSMOLOGY AND HUMAN DESTINY**  
**SBM RULES AND THE WORLD**  
**2006 - 2018**

**IS HISTORY GOING TO REPEAT ITSELF AFTER 100 YEARS?**

Allah created the Sun and the Moon, and the Stars  
(All) are governed by (His) laws under His Command.  
Indeed it is for Him to create and to order.  
Blessed be Allah, the Cherisher,  
And the Sustainer of the worlds!  
Al Quran, Sura Al-Araaf, Aya-54.

Predication of future with certainty is not possible for any human being. It is Allah, the Creator of the Worlds who knows best. Man can only interpret His signs. Sun is one of them. The book, “Cosmology and the Human Destiny.....” was published in 1998 where I developed certain rules and regulations to predict the general overall situation in the world from the knowledge of the sunspot activity. These rules were derived from the statistical analysis of the historical events on earth with respect to the corresponding sunspot activity. For the sake of name, we may call these “SBM Rules” for prediction of futures from sunspot prediction (See Chapter-4). The idea is that if solar behaviour can be predicted then on this basis we could predict the future on earth also. It is like weather fore casting. Using the available predictions of NASA about Cycle-23 (1996-2007), I tried to gauge in the future of mankind for this period. That was putting the SBM rules to test. Time has proven the validation of these rules with remarkable accuracy.

I started serious research on this subject in 1992, after reading in a new paper that very unusual events of failure of electricity in New York, USA and Quebec in Canada were probably caused by the high solar magnetic storms in those days. My thesis was, if solar storms can influence working of our computers then why should they not affect the working of human mind, consequently, the human behavior. After all, our brains are far more sensitive than the electronic gadgetry. In those days I was extremely busy in my official assignments and needed a hobby for my spare times to keep my mind fresh. Thus I began to study the world history with reference to sunspot activity; and in the process tried to develop some relationship between sunspot activity and corresponding important historical events. Consequently, the rules given in the chapter-4 of this book were arrived at. According to these rules, SBM Crisis Factor is directly proportional to the product of the maximum sunspot value, time above 80% of the maximum activity, and fall period from maximum to the beginning of the next cycle; and is inversely proportional to the rise time from the minimum to the maximum of the predicted cycle. However, it magnifies many times in the spring and autumn months when magnetic effects of Sun and earth get integrated together. For the sake of reference we may give it the name SBM Spring and Autumn effects.

From the then available NASA data SBM Crisis Factor for cycle-23 was 12500 that indeed was quiet high. However, luckily the actual behavior of sun fell short of the

predicted one. The maximum sunspots rose to 170 only in May 2000 against the predicted value of 234. There was also a secondary sunspot maximum of 150 in January 2003. Period above 80% maximum activity remained about 36 months, and rise time from minimum to maximum was also about 36 months. However, fall period from the max to the min is expected to prolong till mid 2007 i.e. about 60 months. Therefore the actual SBM Crisis Factor for cycle-23 was about 10000 i.e. 20% less than the predicted value. But even this is very high. For a relatively peaceful sunspot cycle SBM Crisis Factor should be about 5000 to 7000.

Therefore, as predicted, the earthly events during the sunspot cycle-23 remained abnormally violent and world peace suffered very badly. It brought with it great misery, wars and terrorist attacks of untold magnitude rarely experienced in history. It began with the ghastly attack on World Trade Centre in New York, USA on 9-11-2001, which was the time of great turbulence in the Sun also. As reported in the media, (The News April 3, 2006 Islamabad) planning of attack had begun earlier in 1999. This is the period when sunspot activity had started rising sharply. By 29-3-2001 sunspot activity had reached its peak value of 170. Thereafter, for a short while, Sun experienced some calmness between May - July 2001. However SBM Autumn effects took over in August 2001, reaching their peak in September 2001, and we see the horror of WTC. Turbulent solar atmosphere and magnetic activity continued even thereafter. In this turbulent solar atmosphere on the 8<sup>th</sup> October 2001 USA attacked Afghanistan with unparalleled ferocious bombing. In January 2003, Sun experienced another burst of Sunspot maximum of 150. This also corresponds to violent air attacks on Afghanistan and fall of Taliban regime. At the same time we also see building of sharp tension over Iraq, which reached to breaking point due to SBM Spring Effects. In this environment, Iraq was attacked from ground and air, in March 2003. Thereafter, we see the decreasing intensity of military strikes with the declining sunspot activity in the heavens. But the peace process has been very slow. It could be attributed to slow fall rate of sunspot cycle-23, which is expected to attain its minimum by Mid-2007. The overall peace situation in the world therefore should also improve after April 2006, except for the SBM Autumn Effects in August – October 2006. On the overall we may predict that tension over nuclear crisis of Iran which is threatening world peace should settle down in the coming months, and remain so for next one year. Situation may however become very hot again from February 2008.

Recounting the events in Pakistan, as the solar activity was rising to its maximum; in October 1999 civil government of Mr. Nawaz Sahrif was replaced by a Military Rule in a dramatic manner. War in Afghanistan threatened peace here also. As has been said already, on the overall, world situation for 1999-2004 remained very hot everywhere on earth. However lucky for mankind, it did not go out of control, because Sun has been milder than the assumed sunspot values in our calculations.

### **Cycle – 24 and Our Future 2007 to 2018.**

As said already minimum of cycle-23 is expected to be delayed till mid 2007 and Cycle-24 will thus begin late. It means that the harsh impact of cycle-23 on the earthly events will continue lingering longer. However, except for the SBM Spring and Autumn effects, situation in Afghanistan and Iraq is expected to improve with time till 2008. In Pakistan, trouble in Balochistan and Northern Areas, will also cool down gradually. On

the whole, period between now till January 2008 will be a good time for diplomatic initiatives to succeed every where on earth. We may rule out chances of major military showdowns in this period. We also hope for peaceful elections in Pakistan, provided they are held before 2008 and they can avoid the Spring and Autumn effects. Chances of the success of the long marches, rallies and mob movements' are seen minimum in the next two years except for the seasonal outbursts in Spring and Autumn.

On the economic front, the 2006-2008 depressing phase of sunspots activity is likely to cause most economies to suffer adversely, Inflation will rise and business will be uncertain in this period. However, it should pick up from February 2008 at a rapid rate with the increasing sunspot activity. There are good chances for entrepreneurs to succeed thereafter.

On long term basis, i.e., from 2008 to 2018, if we take into account the predictions made by National Center for Atmospheric Research (NCAR) for the sunspot cycle 24 situation on earth seems extremely hard. It is predicted by NCAR that the next sunspot cycle may be 30-50% stronger than the last one and begin as much as a year late. The predictive Flux-Transport Dynamo Model is enabling NCAR scientists to predict that the next solar cycle, known as Cycle-24, will produce sunspots across an area slightly larger than 2.5% of the visible surface of the Sun. The scientists expect the cycle to begin in late 2007 or early 2008, which is about 6 to 12 months later than a cycle would normally start, and is likely to reach its peak about 2012, and see its fall to minimum in 2017.

(Ref. <http://www.ucar.edu/news/releases/2006/sunspot.shtml>)

If these predictions are true then it means a very bad situation for earth, worse than the events of 1997 – 2007. However, research results by Drs. Leif Svalgaard and Yohsuke Kamide at the Solar-Terrestrial Environment Laboratory, Nagoya University (Japan) and Edward W. Cliver at the Space Vehicles Directorate, Air Force Research Laboratory, Hanscom Air Force Base (Massachusetts) suggest that the Sun may remain less active during the next solar cycle. They predict that the next solar maximum may be associated with a sunspot number of only 75, with an error of  $\pm 8$ . (Ref.. Research News, <http://www.spacew.com/news/05Mar2005/index.php>). If they are right then the situation will be much more milder on earth than that of the cycle 23.

From the above we see that so far long term predictions about cycle -24 are very uncertain. However my personal assessment supports NCAR. Historically it is seen that if the rate of fall from maximum to minimum of any cycle was slow then the following cycle has been generally much more turbulent than the previous one. Therefore, NCAR predictions are most likely to be true. In this case we expect very alarming events for the people on earth, beginning year 2008.

In this case, the world is likely to experience awful political and military turmoil in the next twelve years, which after 2010 may get out of diplomatic and political hands and result into unprecedented wars over the globe. The crisis events could peak by 2012 and may remain at very dangerous situation for 2013 – 2016. Here we can see a parallel with the World War-I, exactly one century ago. After 2015 military options will exhaust,

and diplomatic efforts could start having an edge. Peace should be back by 2017, when sun will be calm again Insha-Allah.

The positive signs are that period of the rising solar activity for 2007-2012 will be excellent for the intellectual achievements, technical innovations and entrepreneurship. Mankind may further conquer many new horizons of science & technology in diverse fields such as; space, communication, deep oceans, bioengineering; cloning and in health sectors etc. However these successes will be marred by frequent great natural and unnatural catastrophes, epidemics and lack of peace on earth. Weather conditions, all over the globe are also likely to remain very uncertain.

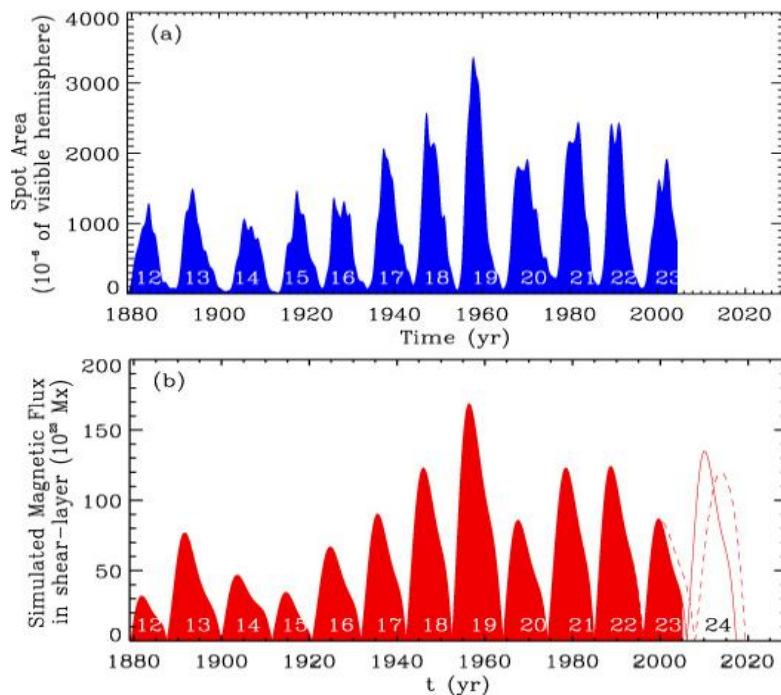
Above predictions are based upon the Sun being very active according to the NCAR predictions. However if sun behaves according to the predictions of Solar-Terrestrial Environment Laboratory, Nagoya University (Japan) earth will then experience much more peaceful conditions. Anyway nothing is fate-accomplished. Based upon past experience we may hope for 80% accuracy if the Sun follows the assumed course. It is like weather forecasting and taken as a timely warning to take appropriate measures and precautions in view of the likely aggressive mood of Sun for the sunspot cycle-24. (Allah knows best)

Allah has subjected the Sun and the Moon  
to (His Laws)

Each one runs (on its course) for an appointed term.  
He does plan and regulate the affairs,  
Explains (His) Signs in detail,  
That you may believe with certainty  
in the meeting with your Rabb. 13(2)

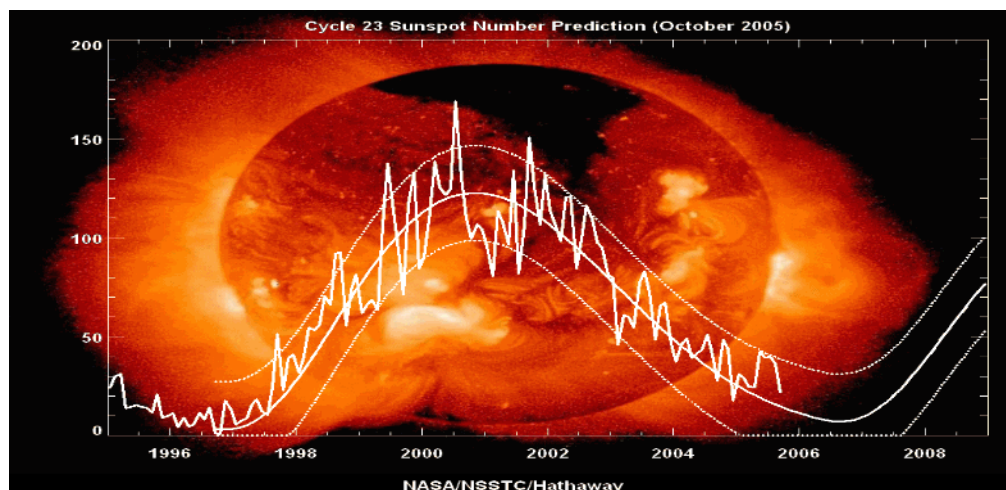
**Sultan Bashir Mahmood (S.I)**  
**April 2006, Islamabad.**

**Fig. 1: Past, Present and Future Sunspot Behaviour**



NCAR scientists have succeeded in simulating the intensity of the sunspot cycle by developing a new computer model of solar processes. This figure compares observations of the past 12 cycles (above) with model results that closely match the sunspot peaks (below). The intensity level is based on the amount of the Sun's visible hemisphere with sunspot activity. The NCAR team predicts the next cycle will be 30-50% more intense than the current cycle. (Figure by Mausumi Dikpati, Peter Gilman, and Giuliana de Toma, NCAR).

**Fig. 2: Actual Sunspot Cycle – 23**





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## **INTRODUCTION**

This book is concerned about the influence of cosmic events on human destiny on Earth, which is surrounded by millions of galactic worlds, each of which has trillions of stars and planets. In this scenario, each one of us is connected to the cosmic organism through invisible strings, one of which is the well understood Gravitational Field for which it is said, "we cannot move a finger without disturbing all the stars", Any type of happenings in any one of these galaxies cannot go without effecting us on earth. When we look deep into our own beings, one is surprised that these so called earthly beings are in fact Cosmic Beings. The very particles constituting our bodies are-as old as the Big Bang itself, born after the first few seconds of the existence of the universe. From then on, we started living in the core of giant stars, which, after having lived their lives, exploded as supernova, and with it our constituents scattered far and wide in space; but, gradually reassembled to form the second, third, fourth and so on, countless generations of stars ,every time becoming more and more complex, on each explosion of supervnova. Finally, we settled at the edge of the galaxy, in the body of a humble looking whirling mass of gases, a large chunk of which became the Sun, and a tiny portion assembled as earth after having done ten billion years of journey in Space; and visiting millions of stary worlds. Thus, every atom of our body is a cosmos in itself, and through the invisible cosmic strings we maintain our relationship with the rest of the world. Our love for the distant heavenly bodies; just like our love for flowers in our gardens signifies this long and enduring relationship. Thus human beings are earthy appearances, with Cosmic Soul. Earth is their temporary habitat, but their destiny is in the cosmos.

In this state of existence, Sun being our- nearest and most powerful neighbour, has very deep influence on our lives. In fact, our earthly existence depends upon it. Its heat and light are the source of life for every living being on earth. Earth's yearly rotation around the Sun gives us our changing weathers, and the Earth's daily rotations on its axis, in front of the Sun is the reason of our day and night cycle.

But there are also some regular fine variations in Sun, impact of which has still not been fully appreciated. The most prominent of these variations are Sunspots, discovered by Galileo of Italy in 1610. These are relatively darker areas on the shining surface of the Sun, being cooler than the surrounding areas. In -1843, a German scientist, H. Schwabe, discovered that sun spots follow a regular pattern which reach to a peak value in about eleven years and then begin to subside to a minimum value and thereafter rise again. Later records showed that this period varies between 9 to 14 years. Since variations in the energy of Sun due to Sunspots is less than one part in thousand, therefore, with respect to heat and light, their impact on earth was considered negligible until recently, when it was realized that unexplained power disruptions on Earth-as well as ghost like failures in satellites in space-correspond with the peaking of sun storms in the heaven. It was found that, at the time of maximum of sunspots, radiations due to solar storms consisting of immensely powerful showers of particles such as protons, electrons, along with very high magnetic fields can even endanger the astronauts. Since then, study of Sunspots has become a very serious topic of research for the space scientists, particularly NASA which has taken many steps to monitor the sun continuously establishing a Solar and Heliospheric Observatory (SOHO) in space. On the basis of these measures they can now make reasonably accurate predictions about the future



of Sun. These predictions are being used in the planning and designing of satellites space flights and sensitive electronics computer hardware.

However, there is another field of concern also. If solar storms can disrupt the operation of computers, then what could be their impact on the human mind, our emotions, and decision making, and on the overall, social and political scenario of mankind on earth. Since early 1950, it has been speculated that large scale unrest periods on earth somehow correspond with the peak Sunspot periods. However, this subject was never taken-up for serious study. In fact many scientists looked upon it with disapproval.

That is perhaps the reason that human dimension of the Cosmic events has remained missing so far and we are unable to analyse the real actors helpful to our own destiny, growth of civilization, and progress of mankind; and thus reasons behind the occurrence of great historical events with any degree of certainty remain a mystery. For example, why is it that with the beginning of 20th century, the world suddenly began to see the unprecedented rise in creative activities and entrepreneurship on earth? Why it is that the world shaking events like the American Declaration of Independence, French Revolution, Russian Revolution, Chinese Revolution, Iranian Revolution, or USA attack on Iraq, and many other great historical events so closely coincided with the period of maximum sunspots in the heavens. Or why is that the most active phases of human civilization correspond with the active sunspot period and in contrast, passive times are when the sun is also calm in the heavens?

I always thought it very much unscientific to assume this human dimension of sun as mere coincidence, and to put it aside. After all human beings are also highly complex electrical machines; with billions of neurons conducting extremely small electrical signals in the brains and body motors-in fact far more complex than the biggest and the most powerful man-made computers. Why should not the solar prominences disrupt their working? To me, it seemed the meeting point between physics and Meta-Physics but I had no means to verify my theory. But my love of occult sciences attracted me to a field far removed from my Nuclear Engineering; and for many years, in spite of my heavy work schedule, and lack of resources, I continued working on this subject, to look for any relationship, if at all it is there, between the sunspot activity in the heavens and happenings over the earth. I decided purely on statistical approach to solve this problem.

Thus, after years of study of world history, the available data on solar variations and physiology of perception, I have come to the conclusion with a fair-degree of confidence that storms in the Sun and storms on the earth go together, i.e. our destiny on earth is influenced by the Cosmic events, particularly, the variations in the Sun. It follows systematic rules dependent upon factors such as the rate of rise of the sunspot activity, maximum value, persistence at the peak, rate of decline of sunspot activity, and ratio of the maximum activity between successive cycles etc.

Applying these principles to the predictions about Sunspot activity, we can gaze into our future on earth also. But more important than this is to plan our lives, control our emotions and take sensible decisions in the light of the prevailing conditions of sun to achieve maximum happiness, greater productivity, peace and advancement of human civilization on earth.

It is but natural that we should be keen to know our future at the end of the twentieth century and the dawn of the 21<sup>st</sup> century. The clock has already started ticking. We have entered the latest sunspot cycle-23, from the beginning of 1997. NASA has predicted that this cycle may be the most stormy period for Sun since 1750, Consequently, one can say that this will also be the most turbulent period for earth; particularly the coming years 1998-2002 which are likely to be highly violent and explosive. But it is not the fate accomplished. It is like the forecast of weather. The more precisely we know about it, the more wisely we can plan our lives on earth.

The book in hand is thus a timely warning for the civil and military leadership of every country. Beginning 1998, they are already being subjected to great emotional aggression under the catalytic effect of the abnormally high Sunspot activity under which they are most likely to adopt aggression as the natural solution for their problems. If wise enough, they can use this effect for the good of mankind, at least, they should filter out the adverse influence of Sun from their political calculations; and thus save the world from grave consequences to which otherwise, it is heading blindly.

The book is important for the general masses also. From now onward till year 2004, under the attack of greater geo-magnetic fields and charged solar particles passing through their bodies, they would be emotionally charged, over confident and energetic and shall be aggressive in mood. In these traits, they can be easily exploited by the revolutionary forces, and disgruntled elements of the society. At the same time, this extra energy and aggressive attitude can help them to surmount their personal difficulties also.

It must be admitted that the present effort is lacking in many ways. I was handicapped in my research due to non-availability of the latest cosmic data. Not being a student of history, it was a tough job for me to co-relate the events of the world history with the available Sunspot data. Then this research required a fair degree of know-how in the working of human brain, and phyco perceptions, I lacked too. But I am satisfied that a beginning has been made; and hope and pray that this work shall attract more qualified scientists to explore the influence of Cosmic effects on human beings.

What is needed is a close look into the daily variation in the cosmic world around us, variations in the sun, solar flares, geomagnetic fields, charged particles and other environmental changes, and then co-relating them with the daily happenings in the world. Besides, a deep insight is required of the working of human mind under various types of environmental impacts.

In the end, I express my deep gratitude to the learned authors whose works I have frequently referred to. May Allah bless them all for their scientific studies about Sun, on which He says in the Holy Quran:-

"And the Sun keeps running,  
(Through space)  
On a preset course  
That is the measurement,  
Of the Most Powerful, The Most Wise.

(Al-Quran - Sura Yasin)

**Sultan Bashir-ud-Din Mahmood**

August 14<sup>th</sup>, 1998

## Chapter-1

# OUR DYNAMIC SUN

### 1.1 Sun and Us:

Most people know the Sun only as a hot blazing fire ball in the sky which showers on earth life giving radiations. But it is much more complicated than this. Ninety three million kilometer away, it is a compact mass of very hot gases in plasma state, 1392000 kilometer, about 109 times greater than the earth's diameter, weighting  $1.99 \times 10^{30}$  Kilogram i.e. 330000 times greater than earth's mass. Its inner temperature is nearly fifteen, million degree Kelvin and each second the energy emitted by it is  $4 \times 10^{26}$  ergs. At the rate of one cent per kilowatt hour, we should have to spend for billion-billion dollars to keep the sun going for a single day, which Allah has given us, free.

Its energy is not derived from any fuel like coal, gas or oil, but through nuclear reactions, similar to those which are the source of power in the hydrogen bombs. This reaction takes place in the inner core of the sun, called photospheres, (Fig-1) where it is like billions of hydrogen bombs exploding simultaneously each second. **In** this process, some of the hydrogen which constitutes 99% component of the solar mass is converted to energy as its atoms fuse together under the impact of immense temperature and pressure condition prevailing inside the sun. This happens according to the relation  $E=Mc^2$  first time discovered by the famous scientist Albert Einstein, where 'M' is the mass and 'c' is  $3 \times 10^8$  meter/ sec. **i.e.** velocity of light in vacuum. This reaction is so violent that all type of sub-atomic particles, electromagnetic radiations, heat, light and bursts of energy are produced simultaneously which travel outward at tremendous velocities to the outer regions of the sun called Chromoshere, and from there, escaping the immense gravitational pull of sun, shoot in space. Had it not been for the atmospheric roof of earth, see Fig-2, (Earth has seven strong atmospheric layers over it, as also stated in the Holy Quran "***And We have wade above you, seven strong harriers***" Aya-12 Sura An-Naha- 79) These radiations could have roasted the life on earth. Function of this roof is to save us from the dangerous solar radiations, most of which are either reflected back into space, or absorbed by it. However, a small percentage of these radiations penetrate the roof of the earth. Particularly in the days of extreme turbulence in the sun, occasional bursts of solar magnetic radiations and particles penetrate deep into earth's atmosphere and from there-on pass through our brain neurons, cells and genes. Due to electro-chemical interaction with our body constituents, radiation from Sun may effect us in many known and unknown ways. In the physical plane it has already been experienced how a large solar storm totally disrupts communications over large swaths of the planet, and cause power outages capable of paralyzing major urban centers. In some cases troubles in the satellite communication system have also been attributed to the electromagnetic radiations of the sun (Time, Sept, 9-1996). If such physical entities get effected by the sun like-wise, there is no reason to reject the proposition that on the microscopic levels, these do not disrupt our internal body functions, working of our minds, and thus influence our mood, behaviour and attitudes etc., and consequently, social and political development on earth.

## EARTH'S ATMOSPHERIC ROOF

The turbulent behavior of sun is due to the hot plasma of gases bubbling up from inside to the outside, as can be seen from the snapshot of the sun's corona (Fig-3) taken recently by the NASA's Solar and Hemispheric Observatory (SOHO). It appears in the form of Sunspots, Sun flares, exploding prominence, darting radio emissions, and pulsating winds, thrown like spears all around in space. Their frequency keeps varying, sometimes very calm and sometimes very explosive. For example in 1959, in the two week period of July 6-20 by taking continuous solar movie, there were observed 29 major solar flares, pouring out from sun, each of them like cosmic serpents rushing out from the sun at speeds approaching 1000 kilometer per second. (Ref: Hentry J Smith- "A Continuous solar movie", 'Sky and Telescope' Jan. 1963). But these are not simply sudden transients of localized brightening of a portion of sun's surface. They are generally accompanied by powerful bursts of X-rays, energetic atomic particles, radio emissions and very strong magnetic storms which after reaching the earth produce abnormal transients in man's environment.

Special causes of concern for humans on earth are the electromagnetic storms in the Sun, and bursts of positively charged particles such as protons which can influence the earthly environment in many odd ways. And we being ourselves very special electro-magnetic machines are most likely to be influenced by them. For example, the normal magnetic field of earth is about 0.3 Gauss, but under the impact of solar flares it may reach hundreds of times above normal. Such magnetic storms, particularly if they persist for longer durations and occur frequently, cannot go without effecting the human electrical systems.

### 1.2 Sunspots:

Among the various types of solar prominences, most outstanding are the Sunspots. In fact they are the primary cause for various secondary abnormalities in the Sun. These were first discovered in 1610 by Galileo of Italy. In appearance these are relatively dark patches on the surface of the sun associated with a periodic rise in solar activity. (Fig-4)

The Sunspot patches appear darker because they are about 2000 degrees centigrade cooler than the surrounding solar atmosphere. However, their temperature is far greater than white hot steel and they look dark only in contrast with their brighter surroundings.

Observations made since 1750 clearly show that there is a periodic rise and fall in the Sunspots activity with an average interval of eleven years. In actual sense this period has varied from nine to fourteen years. However since last seventy five years it has shrunk to about ten years. The rise to maximum is faster than the decline. On the average it takes some  $4\frac{1}{2}$  years to rise and about  $6\frac{1}{2}$  year to fall back to the minimum value. The fast rise and slow decline is generally associated with abnormally high value of Sunspots and explosive conditions in the sun. In the high Sunspot period, the sun throws out larger energy out-put in the form of X-rays, charged particles and electromagnetic radiations. The total excess energy released may be taken proportional to the area under the Sunspot cycle. If maximum Sunspot average is high, and fall period persist for a longer period, the overall influence of Sun on earth will thus be proportionately higher.

### **1.3 Characteristics of Sunspots:**

The Quranic law of pairs i.e. *"Allah creates every thing in pairs"*, (Sura - Yasin) also applies to the Sunspots. They always occur in pairs or groups.(Fig-4) Each Sunspot further consists of two distinct parts, the umbra, the inner part, and the lighter penumbra around it. A normal group develops in about a week and then begins to decline. Initially it appears as a small dark patch on the brilliant surface of the sun, originally one or two thousands miles in diameter, it grows rapidly, if it survives, in exceptional circumstances becoming nearly 100,000 miles across in hours. The pair generally develops in almost the same latitude, but as far as 50,000 miles apart. As they develop, each may become surrounded by a number of lesser spots, the original pair and their associates being defined as a single group.

### **1.4 The Eleven Year Cycle:**

As said already the number of Sunspots on the sun's surface at any times varies greatly. During the maximum period, the sun's disk is seldom free from Sunspots, whereas in minimum years it may remain unspotted for weeks in succession.(Fig-6) Since 1750 the intervals between the times of maximum spots have averaged 11.1 years, but for the past seventy five years have been more nearly Ten years. This long term variation is also cyclic in nature with a period of eighty to hundred years. Thus, the trend of squeezing cycle is likely to reverse in early 21st century. (Fig-SA, B, C)

The latest maximum occurred in 1989, and the next highest Sunspot period is expected in 1999-2000. Earlier periods of maximum sunspots have been July 1989, Dec. 1979 Nov. 1958, May 1947, April 1937, April 1928, and August 1917. (Ref NASA Technical paper 3648). Since 1750, the world has seen 22 Sunspot cycles. Now we have entered Sunspot cycle-23. Summary of some of the significant parameters is given in Table-1. Sunspot numbers against maximum and minima are averaged on the year.

It will be clear from Figure-5-A that the mean average number of Sunspots change progressively but as seen in Fig-5-B & C on short term basis the phenomena is not so smooth. There is instantaneous increase or decrease of sunspot activity, and sometimes the real maximum may be much more than the average of the year. These instantaneous variations are seen to be crucial for happenings on earth.

In proportion to sunspots are observed the variations in the pattern of the sun's corona, in its prominence and flare activity, magnetism and radiation emission. Counts of Sunspots provide an index number that indicates the trend of these changes.

Not only the maximum and minimum of the Sunspots, it is also noted that location of the spotted zones on the sun also changes with the 11 year cycle. The early spots in a new cycle appear in higher latitudes, near 30 degree north and south. Subsequent spots are found closer and closer to the equator, the majority being near latitude 15 degree at the time of maximum. Later spots in the cycle are seen still closer to the equator. Until at minimum the last of a cycle many are observed at about 8 degree north and south, while some forerunners of the next cycle start to be noted in high latitudes. This variation can be seen in the figure given here under

## **1.5 Sunspot And Magnetic Showers:**

It has been discovered that intensity of Sun's magnetic field is very much sensitive to the intensity of Sunspots. In the period of high Sunspots, this field has exceeded 4000 gauss. In the low Sunspot period it is generally 2-3 gauss only. Whereas normal magnetic field on earth is just 0.3 gauss. However, it shoots up many times in the period of high solar magnetic fields Sunspot magnetic fields are generated by enormous electric currents, in the sun, in the same manners as the field of electro-magnet is produced.

It is also found that the pair of the Sunspot is bipolar in nature. If the preceding spot in the northern hemisphere had north polarity, those in the southern hemisphere will have south polarity. The next cycle, however shows reversal of polarities i.e. the preceding spots in the north will have south polarity, those in the south have north polarity. From the reversal of polarity, one may postulate that pairs of Sunspots are like the ends of a bar magnet, placed one above the other in separate parallel layers, hidden in the body of the sun, and as they move up-ward they grow in size, maximum being on the surface.

Over the period, observations have also shown a general reversal of polarity with the start of each new spot cycle, about 22 years (Fig-7) It has two components, (one) polar fields of opposite polarity around the north and south pole of the sun; (two) Ring-shaped fields, parallel to the equator of the sun at about equal distance to the north and the south pole from it.

In this respect another very important feature is that due to monthly rotation of sun on its own axis and yearly rotation of earth on the solar orbit, earth receives maximum of solar magnetic field in the months of March and September each year. (Ref. Baker & Frederick "An introduction to Astronomy" 7<sup>th</sup> edition-Page 182) Thus Spring and Autumn season are relatively most active magnetic months period for earth every year, and more so in the high Sunspot years.

## **1.6 Sunspot And Sun Flares:**

As pointed out earlier too, there are stormy winds in the outermost surface of the sun and some-times these are ejected outside in space as solar plasma winds, visible even by naked eye during full solar eclipse. (Fig-8,9) The Sunspots, and magnetic fields play a major role in the production of sun flares. In fact there is found a close relationship between the Sunspots and solar flares.

A typical flare reaches maximum brilliance in five to ten minutes, and then begins to slowly decline that may last an hour or more. However, there are sometimes extraordinary flares which last longer. One such extra ordinary flare was observed in Feb. 1946 which reached a length of over a million miles and remained visible until July. In the process of production of Solar flares, at first a few Sunspot points brighten, then merge to form luminous and rapidly expanding rope like flashes of solar materials. This is accompanied by short radio bursts of discrete frequencies and bursts of highly charged particles, which result into sudden ionosphere disturbances in the earth's atmosphere. There are also bursts of hard x-rays (at wavelength of 2 angstrom to 0.1), as well as disturbances in the earth's upper atmosphere in the centimeter and decimeter ranges of radio noise. In about 15 to 20 minutes after birth of sun flares, all kinds of electromagnetic radiations attain maximum intensity almost simultaneously. As the flash begins, the ejection of solar matter in space rushes at speeds sometimes at velocities as high as 1000 kilometer per second, or even more.(Fig-9) In this scenario



electrons are accelerated to the speed of light, producing synchrotron radiation in the earth's atmosphere. (Ref. Time Sep 9, 1996).

In short, huge amount of energy is released within 15 minutes or less during this explosive phase of the Sun. After the flare has passed its peak, the bursts of electromagnetic radiations become quieter. But soon they are followed by another flare, so another burst of energy to the earth. This hammering out of radiations attack on earth is hundreds of times stronger in the high Sunspot periods than in the low Sunspot periods. It is also noted that the faster the rate of rise in Sunspot activity, the greater is the phenomena of sun flares; the net effect of which is turbulence in human mind, which in turn effect their daily life and other happenings on earth.

## IMPACT OF SUN ON THE WORLD AFFAIRS

### 2.1 Introduction:

Life on earth depends upon sun. The cycle of day and night, changes of seasons and weather are all due to sun. Formation of clouds, blowing of winds, rainfall, germination of seeds, growth of plants, bearing of fruit; in short whole of the food chain and animal life is dependent upon sun. As such sun has played a major role in shaping the world history and as long as the earth remains in its present orbit, it will continue doing so.

It has also been postulated since long that sun has some strange effects on the social changes on earth. It affects the moods, emotions and psychology of people and influences the political, technical, economic and social events on earth. According to Thorton Page and Lou William Page, "The Origin of the Solar System" (The Macmillan Co-1966) "Rabbits in Siberia, tree rings, and wars, though seemingly unrelated, all have been suspected at one time or another of a connection with Sunspots". It has also been said that an exceptionally high solar prominence in 1938 became the reason to fuel the world war-II. Similarly, revolutionary events such as world war-1, (1914-1917), Russian Revolution (1917-18) Russu - Japan war (1904) French Revolution (1783), Declaration of Independence in USA (1804) are thought to have occurred under the influence of very high Sunspot activity around that period. However, in general, scientists regard these coincidences as non-scientific speculations only.

To look for reality the present writer has objectively studied this subject, and after carefully analyzing the world events since 1750, has seen a clear correspondence between the events in the sun, and major historical events on earth. Peaking of the Sunspot activity occurs periodically on an average eleven year cycle and corresponding pattern is seen in the worldly affairs also. In general the crisis period start about 11/2 year before maximum and remains at peak about 2 1/2 years after the maximum. Table-2 highlights the crisis years.

Besides the eleven years cycle, there is also a regular six monthly spring and autumn cycle when earth and sun are positioned in such a manner that earth receives maximum magnetic radiations and solar particles (Baker and Fredrick). Here also this author has seen a surprising correlation between the rise of intellectual, biological, psychological, emotional, and political activities at the individual as well at the collective level of societies with the arrival of the corresponding magnetic months of February-March-April and then August-September-October, every year. The rest of the year is relatively passive.

In the regular eleven year Sunspot cycle, and the annual Spring, and Autumn high magnetic seasons, there is also a long term pattern of solar activity, spread over centuries, which is found to have long term affects on the climate and weather of earth. It is seen to effect the changing pattern of human civilization also. In the following pages we shall discuss these effects in more detail.

## 2.2 Influence of Sun on physical Systems:

As said already, the Scientific reasons behind the macroscopic influence of Sun on human beings are quite obvious. Its heat and light are the source of energy for every cell of our body. Short term and long term climatic changes and weather on earth are regulated by it. That it has affected the growth of human civilization, evolution of human races, migration of populations, personality traits, living habits, developments of different cultures etc. are so obvious that one does not need an academic Degree in Science to appreciate the link.

But when we come to the effect of fine variations in the Sun, such as eleven year cycle of minimum and maximum of sunspots, or twenty two years Sun's magnetic cycle, or occasional solar flares, or shower of penetrating high energy protons and charged particles and ions, on the human behaviour, their emotions, moods, thought process etc., scientific knowledge is still very much lacking.

However, the impact of fine solar variations on the physical phenomenon is now getting serious attention of science. For example let us take the case of solar protons which are very high energy particles from 10 million to 10 billion electron volts (for comparison, a photon of light has an energy of about two electron volt),. They are of concern to the commercial air lines, particularly those flying along polar routes, where earth's magnetic lines curve to the surface and allow charged particles to penetrate to low attitudes, exposing passengers to alleviated levels of radiations. These events pose a more serious threat to astronauts. Solar protons have also been implicated in the failure of computer system; for example, in August 1989, sunspots at their peak became the cause of temporarily shutdown of the Toronto stock exchange in Canada. (Ref. Peter V Foukal: "The Variable Sun" Scientific American Feb. 1990). Similarly on March 13, 1989, a powerful geomagnetic storm caused by Sun flares, associated with one of the largest spots ever observed, knocked out electricity throughout the province of Quebec in Canada.

The results of ancient sun spot observation by carbon-14 signature in the tree rings (minimum at the maximum sunspot time) show that sunspots has also affected the long-range climate changes on earth. For example the seventy year period 1645-1715 was the period of lowest sunspot in the recent history, called "Maunder Minimum" after the name of the scientist who first pointed it, was also the period of low temperature all over Euro called "Little Ice Age". The reason being dramatic reduction in the level of solar activity; and thus less radiation reaching earth.

In contrast to it was the period of 1100-1250, an extended period of high solar activity, which coincided with relatively warm weather on earth. According to Peter V. Foukal, this warm weather made migration to Greenland and the new world possible. However, as per our hypothesis of the catalytic effects of Sun on human beings, one may also say that the migration of the Viking was actually due to the enhanced human energy and restlessness caused under the influence of high energy solar protons in those years.

In the Indian subcontinent, this period is marked by the repeated onslaughts of Mahmood Ghaznavi and his successors, consequently establishment of Muslim rule in India. In Europe this period brought repeated success of Turkish Khilafat, which

conquered half of Europe, and established itself as the most powerful empire on earth. This might have also become the reason for the great conflict between the European Christians and the Muslims for the occupations of Jerusalem. Since the early nineteenth century, sun has been once again very active, and thus similar high energy effect is visible in the form of continuous upward drive for change, revolution, enterprenourship, speedy travel and urges to migrate out from earth to the planetary worlds of solar systems. The highest peak of sunspots in 1959 could have been the reason behind the beginning of space age then.

### **2.3 Physiological Impact of Sun:**

Besides the physical impact of Sun on human beings, there are also some physiological effects of sun. This subject, though still unpopular among the astronomers, has started attracting the imagination of a few thinking individuals. Among them Ralph Estling of UK, regard the effects of Sunspots on the political state of his country, as real and claims that both Margret Thatcher's arrival and her departure from 10 Downing Street corresponded almost exactly with the peak periods in the 11 <sup>1</sup>/<sub>2</sub> year sunspot cycle. Similarly, Estonian astronomer Ernest Opik, in 1956, observed that revolutions and great political upheavals corresponded with the maximum or near maximum Sunspot activities.

According to another investigator, Mr. Peterson (Ref. Reader's Digest, Nov. 1996 Page-90), "If ever there was an organism constructed to act as a resonator of cosmic event, "it is the human body". Even the variation in the atmospheric temperatures, and barometric pressures, effect the human perception and bio working. According to some Swedish doctors, migraine headaches increases three days after a change in barometric pressure and temperature. Meanwhile, researchers in Japan noticed an increase in asthma attacks when the wind changes direction. Same research suggests that low atmospheric pressure can be associated with

misbehaviour in schools as well as with certain medical ailments such as heart attacks. (Ref. Reader's Digest, Nov. 1996-Page 90).

According to Denis Driscoll, a professor of meteorology, many scientists these days accept the idea that weather has some kind of influence on us. The controversy now, he says, is whether ordinary weather has a measurable but insignificant effect, or something more. Thus a new subject called "Biometerology" is gaining popularity to investigate the influence of weather changes on human chemistry and physiological responses. (Ref. Reader's Digest Nov.1996)

As few more studies have linked sunspots and solar flares-with droughts, rainfall and the associated geomagnetic forces to the heart attacks, epileptic seizures and growth-hormone levels. One of such studies has show correlation between the end of the 11 years sunspot cycle and a drop in the human immunoglobulin levels. Another recent study linked increase in intravascular pressure in healthy people with changing and stormy solar activity. Another author wrote that his research showed, "a remarkable statistical link between Sunspot cycles and the incidence of hip fractures in the elderly (Ref. Reader's Digest Nov. 1996).

These effects, no doubt, are important for an individual, but what happens on

global scale should be of even more concern to the human beings. It looks as if there is a type of "Gaia Effect" due to the collective impact of the total environment of earth-which dramatically influences the "Human Physiology of Perception", their emotional response, which brings out the tendency of violence hidden deep in the brain to its outer regions and from there descending on the physical plane, and disrupt the normal flow of events on earth.

According to Navid Zafar of Pakistan, it may be due to the some occult relationship between Numbers and stars (The daily Muslim August 14, 1991, Islamabad); and as per Ralph Estling of UK, it is due to the "decrease of negatively ionized gases in the earth's atmosphere'. According to him "Heavy sunspot activity, which is known to produce increased number of hydrogen nuclei on protons, thus changes magnetic storms, changes the amounts of ozone, increases aural displays: and effects compasses and radio transmission. It also causes a sharp rise in positively charged ions. This increases irritability and anxiety in people because of its effect on our nerve sheaths and therefore, a reduction of negative ions in the atmosphere-emotions run hot, and we have revolution, rebellions, back bench revolts, and calamities for those in charge". And interestingly he suggests, "Governments of all sorts of persuasion might well ponder the idea of manufacturing psycho-electric machines that will produce and distribute constant heavy and widely dispersed flow of negative ions, (preferably without their knowledge) by a tranquil, if slightly vegetative, populace" (Ralph Estling "Brought Down by the Sun" New Scientist 5 January 1991-No.1750 (Page-54).

Environmental studies about the impact of positive ions and protons on human perceptions and behaviour do have some sort of correlation but effect of the environmental magnetic storms seems of even more drastic nature at least for the physical systems. According to J. Madeline Nash of Chicago (Time- Sep 9, 1996), "as the solar wind races towards the edges of solar system, it snuggles into the magnetosphere, a long, teardrop-shaped region of space that works the boundaries of magnetosphere, untold trillions of charged particles manage to leak through energy unleashed by this disturbance, exits atoms of nitrogen and oxygen which in turn emit pulses of coloured light. The result is an aurora on poles of earth.(Fig-9 & 10) The danger of geo-magnetic storms increases many times more during solar maximum. "at that time, long tongues of fiery plasma leap from the surface of the Sun and rush toward earth like guided missiles". Sometimes the force of their impact is so great that the magnetosphere convulsively contracts. The most violent space storms of all occur when magnetic field lines in the solar wind coincide with those that surround the earth, creating a kind of funnel that channels huge quantities of solar plasma into the magnetosphere. In response, powerful electric currents surge through the high reaches of atmosphere, where they can utterly scramble broad iron pieces and even through sea water and bedrocks. These surface currents can corrode buried pipelines, interrupt transatlantic phase conversation and over-heat electrical transformers. In 1989, during the most recent solar maximum, current induced by a geomagnetic storm brought down the power grid that supplies Canada's Quebec province, and similar cause darkened the American West in 1996"

According to Nash, the solar maximum due sometime around the year 2000, could create worse nightmares, including financial losses of trillions of dollars due to breakdown of satellite communication system, computers and power breakdowns. Therefore, for early warning, NASA launched in 1997, "The Advanced Composition Explorer" or ACE satellite and placed it in permanent orbit between earth and the Sun. Moment by moment, ACE will sample the solar wind and, almost as quickly, relay its finding back to alert the operators of power lines, communication channels and space satellite".

Question which has yet not been tackled so far is to determine the impact of such powerful solar storms on the sensitive human minds, so that to alert the political and military leadership of the world to put themselves on cool to avoid the mistakes of making irrational hot decisions under the attack of frequent stormy geomagnetic fields initiated by sunflares in the high Sunspot period of 1999-2002.



## **MACHANISM OF CREATION OF EVENTS AND SOLAR INFLUENCE**

### **3.1 Sequence of events:**

In our analyses regarding the influence of sun on worldly affairs, it is important to understand the mechanism behind occurrence of events. What we are today is due to events of yesterday, and our tomorrow is already hidden in our today. Some of these events have lead to great advances in the history of mankind; great medical and scientific discoveries for example. Others proved great disasters, either due to natural causes, or caused by man to man such as wars, political turmoils, terrorist's attacks, pollution of environment etc. How far individuals are responsible for these events is a crucial question to know in order to understand our own destiny in this world? Answer to this question rests upon our assumption that sum total of the minds of the individuals comprising a society is the mind of that society; and that since a nation consists of a number of societies, the mind of the nation is the commulative sum total of the minds of the societies within it. On the world scale, the overall mind of the world is the sum total of the minds of nations living on earth.

*Commulative minds of individuals = Mind of Society*

*Commulative minds of the Societies = Mind of a Nation*

Thus in the process of happenings of the man-made or man-caused events at the individual, national or international scale, contribution of the human mind and its activity cannot be denied. Any big or small event, first of all takes place in the mind of some individuals. From there it appears in some form of action, such as reading, thinking, talking, catching, giving, walking, working, each one of which is itself an event, and when put together they result into some happening, which may affect a large number of men and women. This simple chain of events may be described by the following sequential diagram.

Before its physical expression on the stage of time and space, an idea is first processed by mind in the brain. But its out-put to a large degree, depends on "Mood," attitude, and psyche of the person. These are the factors which may be -Out of his control. Thus out of control factors (OCF) become important inputs for the final results. Taking these into consideration, the sequential diagram of events is modified, as shown below.

What are the "Out of Control Factors" and from where does the idea come from? A generally accepted answer is that OCF depends upon environment. Is it then the environment which is the ultimate over riding factor in the creation and controlling of the events? But it cannot be entirely right because environment also in turn is shaped by the events. So there must be additional external causes which influence the occurrence of events in earth. However, these can also be lumped together in OCF. In the same category is

the behaviour of the man, because idea and processing of idea and expression of idea into physical events also depends upon factors many of which may be out of control of the man.

### **3.2 Causes Behind the Events:**

Let us look into that; why on some days we are in a happy mood and on some days for no apparent reason, we feel sad. Why so, particularly when nothing has changed in our own circumstances?

Why is that some time an idea or a thought puts you off, that you may like to weep, or get angry or shout at your wife, kids and colleagues for nothing, but some other times the same idea makes you laugh. Why?

Why is it that some day you just feel inner joy, more friendly, more productive and innovative and some day you feel awfully sluggish, bored or restless? Why so?

The type of unpredictable behaviour mentioned above is not for the humans only. Even in the animal world there are days when they are found to behave abnormally. It happens to a society, a nation, and the whole world also.

Why is it that some day there is sudden rise in road accidents or why is it that there comes a crime wave in a city for no apparent reason? Someone may attribute these things to behavior and mood of the individual and society. But the big question is why such changes in mood or behaviour keep occurring in people and societies?

In the final analysis, it seems more likely that external causes, i.e. the factors out of the control of the man, may ultimately be responsible for such unpredictable behaviour. Accordingly, in the chain of events, man may simply be a media, a catalyst, but truly not responsible for them. Due to him events get accelerated but he is not the real cause behind them.

On the other hand, the environment which molds the character of a man may have a greater role in causing events. It is a highly dynamic and complex system, which has not been yet been understood fully. At least it has two overlapping parts i.e. psychological environment, and physical environment. The most familiar case of the latter is of the industrial pollutants from exhaust of factories, spray of pesticides, burning of carbon or sulfur based fuels, release of Freon type gases, noise of machines, and electromagnetic radiations from T.V or radio transmitters and high tension electric power lines, etc. Besides such physical pollutants, psychological environment is the product of information media, propaganda, education, and norms of a society etc. All these are man made pollutions which to some extent have modified the earthly environment and hence, our own bodies, brains and mind in many ways, most of which is yet to be understood.

But, there are also great many environmental changes on which man has a little or no control at all. However, these affect us in divergent ways, physically and psychologically. Some of these changes are caused by the earth itself; for example eruption of volcanoes which throw huge quantities of poisonous gases and dust in the atmosphere. History records some terrible volcanoes which filled the atmosphere with so much dust and gases that sunlight was substantially cut-off for months on earth.

which had brought severe winters, out of season rain storms, and consequently, through disease and famine changed the course of civilization in affected countries.

Earthquakes also bring about sudden environmental changes with their vibrations, by disrupting large earth masses, changing the course of rivers, or breaking of the mountains. Similarly, floods, sea storms and hurricanes, are also the great agents of nature bringing environmental changes on earth which some times have profound effects on the destiny of mankind.

### **3.3 Cosmic Causes:**

Above are the few examples of earthly sources causing environmental changes, but there are also bodies outside earth which have great impact on our environment and thus affect our lives on earth. As is well known we are surrounded by billions or trillions of stars, planets and heavenly bodies. All of them are in a state of balance due to the precisely determined design of the structure of the cosmos and the forces prevailing therein. For example, force of gravity is all around pulling and pushing us. Thus any large disturbance in any nearby star would also shake us on the earth.

But most prominent effect is due to Sun and Moon. For example sea tides are due to elliptical path of Moon around earth, and earth's 24 hours cycle around its own axis. Through this mechanism alone, moon affects the working of mankind daily. But it may also be affecting the biological clock of the living beings, and their mental attitudes in many other ways which we do not know. As for the sun, it is the biggest heavenly body close to us and nature's primary agent to control our environment and shape our lives. Changes in weather; formation of clouds, rains, wind storms, ocean waves, growth of vegetation, plants and forests, are some of the more familiar effects of sun due to its heat and light reaching the earth.

But there are some invisible effects of sun also. These are due to storms in the Sun, solar magnetic fields and winds. They are powerful enough to disrupt the sensitive communication system, working of satellites affecting our ionosphere, and bringing about long term climatic changes on earth. Besides, there are regular changes in the bursts of solar particles, radiations, neutrinos, magnetic storms which pass through our body cells even under shade. Since our brain system is an extremely sensitive and powerful bio-computer its being influenced by the solar radiations and magnetic fields and thus our behaviour, psychological traits, and emotional developments and consequently, events in the world, should not surprise anyone. However, it is unfortunate that this subject has not received serious attention from science, and that is perhaps, why we have not yet understood our own fate on earth.

Take the case of long term civilization changes around the globe. So far no physical reason is known for it. What happened at the dawn of the 15th century then Europeans, who had little previous history of civilization, suddenly rose and soon became the dominating force of the world. Or, one may ask, what made civilization travel around the globe from Babal to Rome, then to Arabia, then to Istanbul, then Europe, and recently to USA, and in future may be Far East Asia? May be the answer lies in the long term changing cosmic effects such as Sunspots effects and solar magnetic radiations being received by a particular part of the globe more than the others. A region becomes active when it starts receiving greater solar magnetism, and passive regions remain dormant.

### 3.4 Historical Evidence:

Relationship between Sunspot activity and occurrence of great happenings on earth can be directly verified from the historical data of the world at least from 1750, since when records of sunspots are available. It is not to say that sun controls the behaviour of earthly people, but that it has some sort of catalytic effect, i.e. activities on earth in some ways are related to the activities in the cosmos, particularly to the sun in our case. Analyses of the major world events of the last 250 years prove the point.

Case histories discussed in this book show that almost 80% of the political events, public unrest, agitation, political upheavals, turmoil or bad law and order situation occur in Spring (Feb- March - April) or in the month of Autumn (August-Sept-Oct.) Almost in 70% cases they correspond to the years of peak Sunspot activity. It will be very unscientific to call this overwhelming evidence as mere coincidence. It calls for more scientific research to analyze reasons for it.

### 3.5 The Reason:

In our opinion it is due to the combined impact of solar radiations super imposed on our brain activity which is itself the end result of the electrical signals running in the billions of neuron cells comprising our brain. The solar variations reaching the earthly environment modify the normal working of our brains. It is like the noise induced in a radio receiver is electrical environment. Moreover, the overall intelligence response rate depends upon the ease with which brain neurons react and conduct its electric energy. A dull brain is supposed to be more resistive to inter-flow of electrical pulses between its various components. Possibly under the influence of cosmic effects such as magnetic radiation and charged particles normal flow in the neuron of the brain is modified under the catalytic impact of the external causes; and thus people unknowingly start behaving abnormally. If controlled, this state of mind could prove good for productive activities, creativity, inventions and industry and growth of new ideas. But if it grows unchecked, it will result into large scale mass agitation, turmoil, strikes, public frustration, anger, political unrest and finally blood shed.

Rules concerning the influence of Sunspot over world events will be discussed in Chapter-4. To verify these rules we shall analyse individual events of each sunspot cycle period since 1750, starting from cycle-23, downward, since immediate past interests us more than the far distant happenings.

### 3.6 General Remarks:

Table-5 shows that prior to 1700 AD, Sunspot activity was very low which rose from near zero value to a significant level of 60 by 1700 AD. Looking at the world history, we see striking correspondence between the Sunspot activity and beginning of the rise of the western civilization in this period. Before this, as Sunspot activity was very low in the heaven, so **were** the centuries of passive conditions on earth also. From 1700 AD onwards, as the Sunspots started picking up, we see increasing rise in the activity on the earth also. Thereafter, it has continued at ever rising scale, till we see a very explosive situation at the end of the twentieth century, visible from Fig-8 of commulative total of world events since one AD.

Consequently starting 1750, except few calm hold ups it has been a period of tremendous discoveries, developments, inventions, movements, communication, increase in population, great political upheavals and revolutions, rising emotional disturbances, terrorism, crime, fighting's and wars. In short, everything has moved fast on earth with the corresponding increase in the Sunspot activity since 1700 A. D., people becoming more and more restless with agitated state of mind, crazy for change and taking high risks. Situation at the end of twentieth century is more volatile than ever, mankind is in great turbulent state of mind, and we should expect great changes in quick sequence of events in the next few years.

Comparisons with historical data of the last two hundred years from Chapter-5 to Chapter-27 also prove that high Sunspot period should not be taken only in a bad sense. It is also a period of great developments in science, technology and new ideas.

In conclusions, we may say, that to escape from the adverse effects of Sun, it will depend upon our conscious efforts to control our emotions, after having acquired the knowledge about the influence of sun on our mental attitudes. It is to be appreciated that the impact of sun on our lives is not a case of fait accompli, but should be taken as an opportunity provided by Allah to prove our maturity and take the advantage of the high energy period of sun for positive achievements to continue progressive journey of civilization. In the same context the period of low Sunspot activity is to be utilized consolidate the gains achieved in the high Sunspot period. We have to be wise enough to make hay while the Sun shines.

## SBM RULES CONCERNING IMPACT OF SUNSPOT ON EARTHLY EVENTS

We have already discussed those solar variations because fine changes in the environmental radiation of earth. As discussed already in chapter-2 their impact on the satellite electronic equipment and failure of communication systems has been widely reported in the recent years. However, their impact on the behaviour of the living beings, particularly human mind, has not been seriously studied. Though, human beings, who are all very complex electrical machines, and all their thoughts and behaviour is the result of inter communication of billions of brain cells can not be assumed to remain unaffected by the solar storms. It is not to say that sun has some sort of control on the behaviour of the people, but that it has a catalytic effect on them. A sound way to study this effect is the direct analysis of the human history visa-vis the Sunspots, which is the approach adopted in this book. Consequently, critical analysis of the human history of past two hundred and fifty years has been made with reference to the available Sunspot data which shows that human beings and their history responds to the changes in the Sun according to the rules, which we may call S B M rules after the name of them discover.

### 4.1 **SBM General Rules:**

1. In general, the periods of charged emotions, sprouting creativity, emotional agitation and political turmoil on earth seem to correspond with the active solar **years**.
2. Turbulent effect is found relative. For example, if a fast rising high Sunspot period is preceded by a passive cycle, the effect on the world affairs will be in the same ratio high. However, if two successive cycles are equally high, or low, the overall effect of change will not be too pronounced. (For example cycles preceding world war-I & II were very much passive.)
3. Reasons for abnormal happenings begin to brew in the period of rise of Sunspots. When the rise is quick, the succession of events leading to the worst turmoil is also proportionately quicker. If the rate of rise is slow, events move in a more gradual manner. Rise to peak in less than 42 months has generally brought turmoil with it. Any sudden rise at any stage has been observed of devastating effects.
4. Slow rise in Sunspot activity is found conducive for greater productivity, industry, invention, entrepreneur-ship, and creative activities, however as it increases beyond 70 Sunspots on average per year, confusion takes over the order, and with further rise, it turns into chaos and violence, resulting into uncontrolled emotions, volatile moods, and finally aggression and chaos in social and political events, all put together resulting into public unrest, irrational behaviour, senseless quarrels, and wars.
5. Devastation effect of the crisis is also seen proportional to the persistence of Sunspot activity at the peak. If the peak is wide, crisis will multiply and persist for longer period. If it subsides quickly the crisis may also subside quickly. Net impact appears proportional to the area under the curve of sunspot cycle.
6. In general, the crisis rears start about 2 years before the peak and 3 years after the peak period i.e. about four to five years out of every eleven years of Sunspot cycle.
7. The rate of fall and time period of decline from the maximum to minimum is also very important to gaze into the magnitude of the world happenings. In the fall periods events begin to mature and seen in the physical plane. The longer the fall time, the

longer will the crisis persist. On the other hand, a crisis will quickly fade out if the fall rate is also quick enough.

8. Though Sunspot activity follows on eleven year pattern, but there can be sudden burst of solar activity, even in the period of low sun spot cycle. Thus, if there is a strong burst of solar activity, even in the low Sunspot period, it can upset the predictions based upon the average, and cause some premature events out of routine also.
9. Every year, twice, Sunspot bulge out in the Sun .i.e. earth in the months of Spring and Autumn receives the maximum solar magnetic effects. Thus on annual basis, period between 15<sup>th</sup> Feb. to 15<sup>th</sup> May and 1<sup>st</sup> August to 1<sup>st</sup> Nov, is generally of high emotions, aggression, agitation, creativity and budding activity on earth.

Above statements may be summarized below:

SBM Crisis factor and intensity is directly proportional to

Peak value of Sunspots

Rate of fall of Sunspots

Persistence at the 80% peak value

Rate of rise of Sunspots

Combining these together:

SBM Crisis factor and intensity =

$$C = [K (\text{Peak value}) \times \frac{(\text{Fall Time})}{(\text{Stay at 80\% peak})}] \cdot (\text{Rise Time})$$

OR  $C = K.M.T_P \cdot T_F/T_R$

**Where** M = Sunspot Maximum value

$T_P$  = Time 80% of the Max. value in month

$T_f$  = Fall time in month

$T_R$  = Rise time in month

C = SBM Crisis factor

K = Constant of Proportionality. May be taken two for spring and Autumn, and one for the rest of the year.

SBM Crisis Factor = [80% Stay at Peak X Fall Time] [ Peak Sunspot] / Rise Time

Highly Productive Year = 80% Rise Time

Peak Crisis Years = One year before and Two years after Max.

Confusion Years = 3 years after Max.

C = Ratio of the peak of under reference cycle / peak of the proceeding cycle

The magnitude of crisis in any sunspot cycle period is relative to the level of crisis in the immediately preceding cycle. Ratio greater than one between maximum to maxima of successive cycles means crisis magnitude has increased proportionately.

#### **4.2 SBM of Spring and Autumn Effects:**

We have discussed already that besides the eleven year cycles of Sunspots and 22 year cycle of magnetic reversal of polarity, there are daily, monthly and yearly variations in Sun also. It is seen that the effect of all the short term variations is most pronounced in seasons of Spring and Autumn, i.e. months of Feb. March and April and then August, September and October; with peak in March and September each year (Fig-16). The reason being that Sun's rotation is in the same sense as the earth's rotation on its axis and orbit. Combined impact of these is due to the gradual drift and bulging of Sunspot belt across the solar disk twice every year. This is due to the fact that sun's equator is inclined to the plane of the earth's orbit at 70 and therefore, the paths of the sun spots across the solar disk are generally curved; the curve is greatest early in March, when the sun's south pole is in the earth's direction and again in September, when its north pole is towards earth. (Ref. Baker and Frederick "An Introduction to Astronomy" 7th Edition. (Page 182). Thus earth will receive the maximum impact of solar magnetic fields in these months. Since solar disc is never free of Sunspots and magnetic storms, therefore even in low Sunspot period earth receives large solar magnetic flux in Spring and Autumn which is proportionally pronounced in the high Sunspot years.

Now since magnetic fields can drift the electrons, accelerate the electrical activities, produce charge in conductors and change the chemistry of the neurons of the brain, therefore, all living beings, particularly human beings, behave differently when subjected to greatly enhanced magnetism and radiations, particularly for longer durations. Spring and Autumn are thus always special months for all living beings on earth. Plants, animals and mankind all of them go into the rhythm of greater productivity, intellectual activity, agitated moods and emotional instability and aggression.

Interestingly, many of the great achievements in the history of Travel have taken place in September. For example, first round the world voyage took place in September 1522, first passenger railway started in September 1826; the first dirigible balloon flight was in September 1852; and the first spacecraft reached on the moon in September 1959. (Ref Time-September 21, 1998)



Thus seasonal impact of the sun is not entirely negative on humans. All we need is to plan our programs taking into considerations the sun also. For example, for the Spring and Autumn seasons, the following rules would be helpful in achieving peace, development and happiness:-

#### **4.2.1 SBM Guidelines for General Public:**

1. Creative writers, scientists, designers, engineers, entrepreneurs, should put greater efforts in their projects in Autumn and Spring to achieve quicker results due to the energetic effect of the solar magnetic effects on their brain neurons and mind mechanism.
2. As for sports, national games, and adventure programs, you are more likely to get much greater enthusiastic response, if these are planned for Spring and Autumn.
3. Events of happiness and enjoyment such as marriages, sports, games, concerts etc. should be organized in Spring or Autumn period for greater response and enjoyment.
4. Entrepreneurs should better choose the Spring and Autumn to launch new projects, new ideas and creative activities.

#### **4.2.2 SBM Guidelines for Governments & Politicians:**

5. Political events such as national elections should not be scheduled for the months of Spring and then Autumn Months of May to July and November to January will be more favorable for calmer politics.
6. As for politics of political rallies, agitation, calls for strikes, protest marches, they are likely to prove more successful and responded favorably by public in the Spring and Autumn months
7. Government should also be more careful in the Spring and Autumn about their policies concerning labor problems, levying of taxes, police raids, national rallies and public meetings. Better postpone them to the passive magnetic months.
8. Law and Order agencies should be more vigilant and prepared to cope with the crime waves, agitations and emotional outbreaks in the Spring and Autumn months relative to the rest of the year.
9. Governments or individuals should not choose the months of Autumn and Spring to settle their outstanding disputes because your adversary will be already in the excited state of mind.
10. If on war, then choose Spring and Autumn to strike first, because of high morale of your soldiers, and enhanced alertness and greater confidence level in your commanders.

#### **4.2.3 Guideline for Personal Matters: when to Marry and have Children:**

Marriage and Children are very important personal matters, and require a thorough consideration for best results. In Pakistan and many other Asian countries, generally, marriage months are Nov-Dec-January, whereas in the west these are Spring and Autumn seasons. If we consider the time table with respect to the solar activity, it appears that most Pakistani marriages take place in the solar passive months i.e. Nov-Dec. Jan-Feb., i.e. when the "Catalytic Cosmic Effect" is quite low. Whereas in the West, these take place in the active solar months, when couples due to catalytic solar radiation are in high emotional state; an essential ingredient to enjoy at least the initial phase of the

marriage life.

However, the impact of the solar catalytic effect is seen far more on the children born as result of these marriages. If marriage is in active sun season i.e. Spring Autumn, then conception of the first born would be most likely in these very months. Due to the greater catalytic effect of the sun on the cells of the mother and father, the new born is likely to be more active, aggressive, extrovert and creative. In general he is likely to prove more productive, more dynamic and restless. On the other hand children conceived in the months of Nov. Dec-Jan. or May-June, July will be relatively introvert, tradition loving, slow in response, cool and passive because the active solar component was less in the mother and father at the time of their conception. Therefore as a measure of good planning it is suggested that

1. Parents who like aggressive, extrovert, active, restless and go-getter children, may plan conception in the Spring and Autumn season; and avoid the months of May-June, July or Nov-Dec and January. Thus children born in winter and summer season on the average will be emotionally active, innovative, strong, and aggressive, due to the catalytic effect of the greater electromagnetic radiations of the Sun.
2. Children as a result of conception in the months of July-August, October-November, and then February and November should be of more balanced personalities.
3. For greater enjoyment and happiness young people should plan their marriages in the months of Spring and Autumn, preferably in March or September.

#### **4.3 Solar Magnetic Fields, and Food Stocks:**

It has also been observed that Sunspot activity effect earthly climate, severe droughts and floods are found to generally correspond with the reversing of sun's magnetic polarity on a 22 year cycle period. They are seen to occur in a pair pattern, some portion of earth under severe drought, and some under high floods.

The past history of Sunspots shows that "drought and flood pair" arrives in the first two or three years just before every alternate Sunspot maximum, after each 22 years. For the present magnetic cycle, next drought/ flood period begins by 1997 and will continue till 2002. Part of the world will have excessive rains and part terrible drought. The world food production will thus decline in the coming years. (If we refer to the Sura Yousaf of the Holy Quran, the 22 year period of good and bad harvest season is divided into three spasms of seven years each i.e. first seven years of normal harvesting, then next seven years of very good harvest period, and then next seven of bad harvesting period). It seems that the world is now falling into bad harvesting cycle of seven years from 1997.

In this situation world leaders should give priority to food production and food preservation. Governments should build food stocks and control wastage to feed the hungry people whose number may increase manifold after 1999.

#### 4.4 Rising Scores of Intelligence Tests:

According to Ulric Neisser - (American Scientists Vol-85- Sep.1997) "intelligence test scores are certainly going up all over the world. For example, the mean performance of Americans on a variety of IQ tests has increased by nearly 20 points since 1930 (i.e. one point per three years). In Netherland the military induction tests average score has gone up by 21 points in just 30 years between 1952 and 1982". (American Scientist Vol. 85-Sep. 1997 page 443). However, the reason for it is not fully understood. In fact it is a pretty confused subject. Lot of credit is being given to universal education, and exposure to complex visual media. But Ulric Neisser rightly says, " This is hardly a final answer, but it may be a useful way of thinking about the worldwide rise in test scores".

We may get the real answer to this question in our hypothesis about the impact of solar variations on human beings. We therefor, conclude that the rising trend of intelligence in the world is due to the increasing sunspot activity since the beginning of the 20<sup>th</sup> century. To see this correspondence, we may superimpose the result of I.Q. test scores on the mean maximum of sunspot data for the same period. A good correspondence is visible from the table-4 and figure-1 7.

#### 4.5 Long Term Changes:

*Besides short term regular cycles of Sunspot and magnetic radiations, as seen in table-5 there is a long term cycle of variation in Sunspot also. For example, the on going wave of sun spots started about the end of 16<sup>th</sup> century, and since then its intensity has been gradually rising. Before 1700, Sunspot activity was virtually non existent for several hundred years, at least.*

*With the recent discovery of the effects of Sunspots on tree rings, knowledge of Sunspot have been extended quite reliably, by several thousands years in the past. (Ref.: Jeff Karipe, Richard Talcott, Robert Burnham " The rise and fall of the Sun's activity, long term climatic effects, and the energy output Sun". Astronomy, Oct. 1988). It is thus found that Sunspots were at high value in the 12<sup>th</sup> century , then the most Sunspot active period was between 5 to 7<sup>th</sup> century AD, and before that between 1<sup>st</sup> to 1000BC, then the 3000 to 3300 BC was excessively active Sunspot period, it then remained dormant for several centuries till we see peaking up before 5000 BC. These seem to compare well with the up and down in the world history. Since the beginning of 20<sup>th</sup> century, Sunspot activity is constantly on the rise, which corresponds to the ever increasing rise in speed of the world events.*

*As for the climatic changes, temperature slightly rises in the maximum period and falls in the minimum period. For example, period between 1645 to 1715 corresponds to a period of abnormal cold and glacier advancement in Europe known as the "Little Ice Age", the reason being that the total number of Sunspots seen during this 75 year period was less that what astronomer sees in a one single year at present.*

*The rise in the temperature since the beginning of 20<sup>th</sup> century can also be contributed to the rising intensity of Sunspots. Therefore the so called "green house effect" i.e. concentration of carbon dioxide in the upper atmosphere, may not be the exclusive reason for world wide rise of temperature in these days. It may be partly due to the greater amount of solar radiations being received by earth since the beginning of the 20<sup>th</sup> century, due to greater Sunspot activity. Phenomenon like Al-Nino, is also seen*

by this author as dependent on Sun spot intensity.

Long term movement of civilization on globe may also be shaped by the varying Sunspot effects on different regions of the earth. For example the rise of Europe from 12th century, and its having been dormant before, occurred because it started receiving greater impact of Sunspots after 12<sup>th</sup> century. Before that, the movement of civilization from Babel to Rome, then to Arabia, and Middle East and then to Europe, and now USA, also seems be due to the long term influence of sun on different regions of the globe.

Fig- 18 shows the rising trend in the sunspot activity since 1700 AD. If we compare this trend with the occurrence of great world events since then, one is surprised to see them going in parallel. To illustrate it Fig-19 represents the commulative total of 1000 great events of the world since one AD to 1985. It is seen that for centuries the rate of rise i.e speed of occurrence of great events remained slow and it was a passive world. However, after 1700 AD, we see that the trend in the occurrence of great world events started rising sharply. Since the beginning of 19<sup>th</sup> century the rate of rise is very high and beginning of 20th century it is simply explosive.

## Chapter - 5

### OUR FUTURE: THE SUNSPOT CYCLE-23

(1997-2007)

Sunspot cycle-23 is our immediate future. Therefore before going to the past let us gaze into the next eleven years with reference to the predictions about the cycle-23 i.e. period of 1997-2007 (*Fig-20*). It should be of great concern for mankind because most of us may live to see it. Infact it is already there and the trend of the rising Sunspots since Jan 1997 indicates that this will be quite an explosive period for earthly beings. According to the predictions by NASA (Robert M. Wilson, David Hathaway and Edwin, J Reichman NASA technical paper 3648, August 1996,) cycle-23 may be the most active cycle since the beginning of scientific recording of Sunspot data. They say:-

"Based on the expected values for cycle 22 (using only the modern era cycles) we infer that maximum amplitude for cycle 23 will possibly be near record value, either the second largest or perhaps, the largest cycle ever observed" (page 3). This value is predicted to be anything between 162 to 235. It is expected to be more that 162; at 95% confidence level. In comparison it may be noted that maximum of cycle 22 rose in 3 years in July 1989 to 158. High activity persisted at 140 upto 1992, the minimum reaching in 1996. But historically, cycle 20 had its maximum value of 201 in march 1958, the highest Sunspot activity ever recorded. However it is predicted that the cycle 23 will be of more volatile rising phase through its maximum phase, which persists through the year 2001 (Wilson). Maximum is expected to follow the minimum in less than 42 months i.e. If Jan. 1997 is the minimum period, maximum will be some-where between 2000-2001, most likely expected in June 2000-

Following is the predicted Sunspot data for cycle-23.

#### 5.1 **Predicted Values:**

- |                                    |                    |
|------------------------------------|--------------------|
| 1. Minimum Value                   | =10 to 14          |
| 2. Beginning of Cycle-23           | =Beginning of 1997 |
| 3. Rise period                     | =42 months         |
| 4. Peak year                       | =June 2000         |
| 5. Highest Sunspot activity period | =1999-2001         |
| 6. Peak Sunspots yearly average    | =as high as 234    |

## 5.2 Predictions About World Affairs:

Peak Sunspot value for cycle-22 was 157, reached in July 1989. In comparison to it, as seen from the above data, Cycle-23 is predicted to be even more volatile and explosive, with peak value going as high as 234. Consequently, the effect of solar magnetic field and solar outbursts, X-rays, and charged particles reaching earth are also expected to be proportionately high in the coming years; more than ever since scientific recording of Sunspot activity began early 1710. As per rules discussed already, this extraordinary Sunspot cycle will bring with it extraordinary effects on the human beings on earth. The events beginning from 1998 to 2002 at least, may be of un-imaginable dimensions, fast changing explosive magnitude and of disastrous consequences.

The least we can say is that in the coming five years, the world will experience far greater crisis situations than the upheavals of cycle 22 (1984- 1996). If we recall the events of peak year of cycle-22 (1988-1991) it had brought with it break of the USSR, extreme unrest in East Europe, unimaginable agitation in China, horrible war of USA-Iraq, and extreme degree of turmoil in many other countries of the world. But future historians may reckon it quite a peaceful period when compared to the events of cycle 23 (1997-2007). with reference to Fig-20-A, we see that Sunspots activity has started rising rapidly since Jan 1997, and the corresponding quickening of events and violence of last one and half year, should be an eye opener for the world leaders. Instability in India and its exploding of 5 nuclear weapons, (3 on 11<sup>th</sup> May, and 2 on 13<sup>th</sup> May 1998,) and then retaliation by Pakistan exploding five atomic weapons on 28<sup>th</sup> May 1998, and the sixth on 30<sup>th</sup> May are not ordinary happenings at all. The emotions are charged on both sides, Kashmir is getting hotter, war at Siachen is continuing -where shall they lead, one can guess only. Confusion in Pakistan, turmoil in Asian states, and rise of Taliban Power in Afghanistan, un-called for bombing of Afghanistan and Sudan by USA in the last week of August 1998 are also not ordinary events. Same is the case of the tough attitude of USA about Iraq since Jan 1997 and continuous sanctions against that muslim country. Iran poised against Afghanistan is also not an ordinary matter. How can all this be explained? The economic depression and crash of the so called Asian tigers in 1997-98 can also be attributed to the volatile sun in this period, In short, violence and instability is seen rising the world over since the beginning of 1997.

Since solar activity is on the rise, we can say that the troubles of Indonesia will sizzle further, bringing with it greater misery not only for Indonesians but also the neighboring countries. Events of North Korea are also expected to explode further and involve South Korea. Situation in Russia will go out of hand, bringing with it economic disaster and famine like conditions in the ex soviet states. Russia may play some military gamble in frustration involving European countries. The situation in Middle East, Israel, and Palestine will worsen, accelerating open armed clash. Israel losing its sense of balance, may attack its neighbors. Another Arab-Israel war cannot be ruled out. USA will also play its gamble of power with Afghanistan, China, India, Pakistan and Iran, initiating world wide trouble. South American states will also find many excuses to fight. In the African continent, people will have enough reasons to repeat the situation of Rwanda of the peak Sunspot years of cycle 22. Besides the international tension; internal unrest, agitation, street riots, terrorism, and political instability will be the order of day in most countries of the world.

Due to the extraordinary rise in Sunspots and solar flares, sizzling and cooking of events will continue, more than ever after 1998. World leaders will take emotional decisions, replace diplomacy by aggression and thus add further fuel to the fire. If they don't come out of the influence of Sun, then, by June 1999, the preparations for major

showdowns to settle their differences by use of brute force will be on the rise.

By the year 1999-2000, under the influence of the very high solar storms many parts of the world will be burning with fire of war. Unrest, agitations, strikes, and senseless killing will be increasing, every day. Even at local levels people highly charged with emotions will strike each other to settle their grievances through street fights and senseless quarrels. At the international level, terrorism will rule, and in this scenario use of mass destruction weapons cannot be ruled out.

If the world leaders do not learn a lesson from the past, a disastrous world war, even more terrible than the world war-II, may be waiting in future. USA, Europe, Japan, China, Russia, India, Pakistan, and many more countries are likely to suffer horrible consequences, if their leaders are swayed by the solar magnetic fields. Millions, by 2002, may die through mass destruction weapons, hunger, disease, street violence, terrorists attacks and suicides. The crisis will multiply in the Spring and Autumn every year.

It is also to be realized that at the maximum of cycle-23 i.e. 1999-2001, magnetic polarity is going to reverse in the sun. Thus the world will experience serious upsetting of its weather. There will be concurrent droughts, and floods, in different parts of the globe resulting into serious world wide food crisis from 1998 onward.

It should not be taken as fait accompli. Disaster fait accompli can be averted and the world may be saved from the looming destruction, if its leaders behave soberly and do not fall in the trap of the sun. We should realize that under the influence of catalytic effect of extraordinary solar radiations, inadvertently they are liable to lose their sense of balance and fall prey to aggression. This extraordinary state of the sun requires from human beings extraordinary conscious effort to keep cool to over ride their rising emotions. Otherwise, the super active Sunspot cycle-23, has only famine and hunger, wars and sufferings, for the man on earth. Again we say, it is not pre-destined, but a test of man's strength of character. However, it can become man's destiny if the civil and military leadership of the world fails to take into account the violent Sun factor into their calculations of decisions making.

In the other scenario, this energetic state of the sun can be made to work for man's glory. The solar inspired enthusiasm for aggression can be put to use for great entrepreneurship, to conquer hunger and disease, to make great inventions, to go deeper into sea and space, to launch space islands, to colonize moon and mars, to bring together humanity for peace and progress. Extraordinary solar activity of 1958 is a good example when mankind launched the great leap forward for space conquest.

Thus the rising Sunspot activity after 1997 invites careful attention of the military and civil leadership of the world to control themselves and their people and to exercise a high degree of statesmanship. Otherwise under the influence of abnormal Sunspots and high magnetic radiations in very near future many countries of the world will plunge into madness of war and consequently untold economic, social and political problems. Particularly, they should be careful during the years 1999-2001, which, due to exceptionally high Sunspots activity may bring with them military crisis of untold magnitude, of horrible consequences - even the atomic war.

The magnetic cycle reversal in the year 2000 calls for efforts to increase the food stocks, to avert famine at many places on the globe. All I can say is that Sunspot cycle-23 is

not the time to fight among ourselves, but of evolving a collective strategy to save the world from the disastrous fate.

## CASE HISTORIES

(1750-1990)

**The rules developed earlier in this book are verifiable from the case histories of the major historical events of the past, discussed in the following pages. This is in the descending order from the immediate past i.e. Cycle-22 to the distant past i.e. Cycle-1.**



## SUNSPOT CYCLE -22

Sept.1986-Dec.1996

|                    |            |
|--------------------|------------|
| Max. Sunspots      | 158.6      |
| Max Time           | July 1989  |
| Min. Sunspots      | 12.3       |
| Min. Time          | Sep. 1989  |
| Rise Period        | 34 months  |
| Fall Period        | 80 months  |
| Total cycle Period | 114 months |

Among the recorded annual averages from cycle 0 to 22, cycle 22 (1986 - 1998) had the highest minimum amplitude of 12.3, and the second highest maximum magnitude of 158.6 on record. Its rise to maximum (3 years) was also among the fastest. Moreover, solar protons events remained extremely high. For example, September 1989 had particles in excess of 15 Gega electron volt (15 Gev) and there occurred eleven events in 1989-90 (Ref. Report AD-A256-685 August 1992 by M.A Shea & D.F Smart). With such characteristics, according to the rules discussed already, this cycle period should be highly eventful and emotionally charged on earth. Many far-reaching scenes on the world political map should be visible. Leaders of the world should be preferring violence above diplomacy. But high activity Sunspot also means unprecedented achievements in the world of science and technology.

### **6.1 Historical Development and Analysis:**

Following details of major world events of 1986 - 1996, show perfect correspondence with the Sunspot activity, and proves our hypothesis that activity on earth corresponds to the activity in the Sun.

#### **Russian - Afghan War:**

Russia entered into Afghanistan in 1979, the max Sunspot year of cycle-21 and established there a govt. of its own choice. After a turmoilful period of a few years, things began to settle down there after 1982, with the declining sunspot years. However, from 1986 upward, as Sunspot activity started rising once again, events on ground started slipping out of their hands. In the next 3 years, supported by Pakistan and America, Afghan Islamic groups became active and gave a very difficult time and eventually crushed the Russian might. It is unbelievable that by 1989-1990, (Peak Sunspot years) one of the super power of the world suffered crushing defeat at the hands of Islamic Mujahideen and started withdrawing from Afghanistan. However, due to very high solar activity, even after passing over the maximum, trouble did not subside. Afghan groups started a bloody fraternal war which cooled down after 1993 and partial peace was established by Taliban in 1994 in the low Sunspot years.

### **Dismemberment of USSR:**

Like its emergence in 1916-17, in the high Sunspot years of cycle-15, Russia was dismembered in the peak period of cycle-23. Confusion created in Russian minds by high solar radiation between 1988-92 resulted into unbelievable scenario of the breaking of this nuclear power, into pieces, and under that chaos scores of Russian Communist Satellite countries won their freedom. The process began in the fast rising Sunspots, years of 87 - 88, and matured in the peak years, of 1989-1990; and completed by 1992 when the solar activity was still very high. The whole system collapsed, economy was under ruin, there were riots, strikes and frightful fights in the entire ex-soviet union states. It began to settle down only after Sunspot activity had sufficiently declined in 1993.

### **U.S and Iraq War:**

The peak Sunspot period of 1989-1991 proved also highly explosive and active on earth in Middle East. Sunspots reached peak of 157 in 1989 and with it were Sun flares, throwing large amount of magnetic fields and radiations, burst of neutrons and charged particles showered in abundance over earth. As expected, this charged the nations of the world. Iraq thus attacked Kuwait in 1989, and took over it overnight. In retaliation, USA and its Allies including Saudi Arabia and Turkey attacked Iraq in August 1990. It was the most ferocious war in recent history. Though it stopped quickly but sufferings of the Iraqi people and heat in the world affairs continued long after in the declining years of Sunspot cycle-22.

### **Chinese Front:**

*Trouble in the Sinankang province of China also started in the rise period of Sunspot cycle-22 and peaked in the peak solar years; and then slowed down to settlement with the declining Sunspot activity.*

*Rise of the students democratic movement in 1988 and reaching to peak tension point in Tianmien Square Beijing in 1989, also corresponds well with the peak Sunspot activity of cycle-22.*

### **Sub – Continent:**

*Pakistan also saw the impact of high rising Sunspot with the political instability of 1987, mysterious explosion in ammunition dump, in Rawalpindi and then plane crash of its President in 1987. With the further rise of Sunspot activity in 1988, street power rose in 1988, and consequently, Benazir Bhutto was elected as the first Muslim woman Prime Minister in the world. However, there was no peace. Under the peak Sunspot activity of 1989, her government was disgracefully dismissed that year. Followed by general turmoil, and re-elections, the new govt. of Mr. Nawaz Sharif, took over but no peace followed and it was also dismissed by the President in 1992. Peace began to prevail in this country only with the declining Sunspot years.*

### **Europe:**

In Europe, break away from Russia of Hungry, Poland, Romania, Yugoslavia also

occurred in the peak Sunspot years of cycle 22. It brought with it great unrest and public killing in the high Sun years, Chechnya was one such victim of brutal force. Things only started settling down after 1993, when Sunspot activity reached low enough.

Yugoslavia and Bosnia also became a war theater under the influence of high Sunspot in the period of 1988-1993. Events there proved highly explosive, lots of people were killed, and then with the decline of Sunspots, peace began to prevail after 1993 only.

### **Africa:**

In African continent, massacre in Rwanda, unrest and agitation in Algeria, Nigeria, and end of white rule in South Africa, were some of the reflections of high Sunspot activity of cycle-22

## **6.2 Scientific and Technical Developments:**

The high Sunspot period of cycle 22 also corresponded with some of the great technical achievements. These included computer boom and Internet revolution, development of most dangerous tactical weapons and their testing in US - Iraq war; Gene splitting and research into cloning from adult cells were also started under the influence of high Sunspots of cycle-22.

Political and scientific developments of the sunspot cycle-22 clearly prove that high Sunspot activities in the sun affect the psyche of the world leaders to the extent that they preferred war over diplomacy to settle their affairs. Had they included the effects of Sunspot activity in their political calculations, they might have escaped the disasters of this period.

## Chapter-7

### SUNSPOT CYCLE -21

(June 1976 - Sep 1986)

|              |   |            |
|--------------|---|------------|
| Max Sunspots | - | 164.5      |
| Max Period   | - | Dec. 1979  |
| Min Sunspots | - | 12.2       |
| Min Time     | - | June 1976  |
| Rise Time    | - | 42 months  |
| Fall Time    | - | 81 months  |
| Cycle Period | - | 123 months |

Sunspot Cycle-21 (January 1976 - September 1986) was an explosive period for sun and correspondingly it proved equally turbulent for the earth also. It peaked to 164 Sunspot average in December 1979 in just 42 months. Thus, not only the maximum value was high, but rate of rise was also very sharp. Then, it stayed at high value for long enough time and gradually declined to 12 Sunspot in 81 months. Cycle period was just about Ten years. Another special feature of sunspot cycle-21 is that normally peak Sun flares correspond with the peak of Sunspots, however, in this cycle-, major sun flares peaked after sunspot maximum between (1982 -1981). It is also to be noted that major flares of long duration had peaked simultaneously with Sunspot maximum of the cycle - 22 (Ref. Robert M. Wilson - NASA - TM-1 10643).

All this means that Cycle-22 was a highly explosive period in the Sun and consequently for the earth. Let us verify this scenario in the light of available historical evidence.

#### **7.1 Historical Development and Analysis:**

##### **African Scenario:**

The sharp rise of Cycle-22 at its very start brought with it clash of Moroccan and Algerian troops over Western Sahara in March 1976, invited troubles and blood shed in Uganda by dissident Ugandans and Tanzanians in April 1976. In 1977 Djibouti gained its independence.

As the Sunspot activity was rising high, tension in the world mounted further. In 1977-78, began war between Somalia and Ethiopia. The peaking of Sunspot brought with it large scale killing and rioting in Zaire's Sahara province. In 1979, the Max Sunspot year. Mauritania withdrew from Western Sahara after defeat by Morocco, and with great deal of turmoil and riots, and world pressure, white minority rule ended in Rhodesia, renamed Zimbabwe. In Egypt things were equally tense where president Anwar Sadat was assassinated in 1981.

Early 1980's the high Sunspot period and 22 year magnetic cycle also brought severe drought in Africa, Ethiopia and many neighboring countries devastated with riots and famine. Things began to settle down only in the years of declining Sunspot activity.

### **U.S.A:**

In the rest of the world things were also explosive in the high Sunspot period. In 1977, US revealed neutron bomb. In 1979 US -USSR signed SALT-11 treaty, but continued testing of new nuclear weapons also. Involvement of USA with Iranian revolution in 1979 also proved a big upheaval for both these countries. In March 1981 there was assassination attempt on President Reagan.

### **USSR Attacks Afghanistan:**

The Max Sunspot years of 1979-1980, proved highly explosive when Soviet troops invaded Afghanistan. Soon after Pakistan, and USA joined together to help the Afghan Mujahideens, which ultimately led to the dismemberment of Russia in the peak years of Cycle-22.

### **Europe:**

Peak Sunspot years of 79-80 brought unrest and turmoil situation in Spain in November 1979, where right wing Army Officers attempted coup. In the atmosphere of political instability in the 1979, Margaret Thatcher became the first Woman Prime Minister in Europe and she brought many radical and aggressive changes in the British economy.

### **Revolution in Iran:**

Another explosive event of cycle-20 was the end of centuries old Monarchy in Iran at the peak of Sunspot activity. Trouble accelerated in the fast rising years of 1977-78, and after a great deal of political unrest the Shah gave in. Imam Khomeini got a rousing welcome of millions of his country-men in 1979 the max. sunspot year. The Shah of Iran fled from the country. The American supported, anti revolutionary forces. Consequently, a group of students of Iran took American embassy personnel as hostages in 1979. In 1980, attempts to rescue hostages ended in fiasco.

### **Iran - Iraq War :**

1980, when Sunspots were still at peak, brought with it Iran - Iraq War. Iraq invaded Iran on the behest of USA. It was a bloody war which lasted for seven years.

In 1982, when Sun was still active, Israel invaded Lebanon. Iran also stabilized its position and invaded Iraq. Things in the Middle East started settling down with the declining sunspot activity.

In 1983, 247 US and 58 French troops were killed by a car bomb in Lebanon.

-

### **Far East Scenario:**

Vietnam invaded Kampuchea in the peak sunspot year of 1978, and ended Pol Pot regime.

China invaded Vietnam in 1979 - the Max Sunspot year.

### **Subcontinent:**

In 1978-79 the Peak Sunspot year was also a year of political turmoil for Pakistan. Gen. Zia in the troubled political atmosphere, and public unrest imposed martial law, became President in 1977. Bhutto was hanged in July 1978 under conditions of unrest.

After 1982, as Sunspot activity started declining conditions began to settle down on earth. France withdrew from Lebanon in 1984, Israel left Lebanon in 1985. Iran-Iraq war came to an end. Conditions stabilized in Pakistan and India also. Events in the rest of the World also slowed down, Aftermath was generally the continuation of the happenings of the peak Sunspot years of cycle-20.

## **SUNSPOT CYCLE -20**

(Oct. 1964 - June 1976)

|                         |            |
|-------------------------|------------|
| Peak Sunspots           | 110.6      |
| Peak Time               | Nov. 1968  |
| Min Sunspots            | 9.6        |
| Min Time                | Oct. 1964  |
| Min. to Max rise period | 49 months  |
| Max to Min Fall period  | 91 months  |
| Cycle Period            | 140 months |

Cycle-20 was also a high Sunspot period in the sun and the same happened for the events on the earth. It began in Oct. 1964 at average minimum of 9.6 Sunspots per year, and in the next 49 months shortup to 110.6 in Nov 1968. It stayed near peak for next two year, then shot-up but began declining to the minimum of 12 by Jan 1976. The sharp rise and staying at peak for two years (1968-1970) and then slow fall indicate that it would be again on explosive cycle for the world. Following historical evidence should prove our point.

### **8.1 Historical Development and Analysis:-**

#### **African Scenario:**

The rising period Sunspot cycle-20 began with independence of several countries of the world, including Gambia in 1965, Botswana and Lesotho in 1966. The rising Sunspots brought in May 1967, conflict in Nigeria leading to secession of Biafra, and Civil War. In the high peak Sunspot year of 1968, Equatorial Guinea, Mauritius and Switzerland gained independence. In the Max. Sunspot period of 1969, Col. Gaddafi overthrew the king of Libya, and two years, when Sunspot were still high, General Idi Amin seized power in Uganda after military coup in 1971.

#### **U.S.A.**

Vietnam War began with the rising of cycle-20 in 1964, and continued heating with increased Sunspot activity. USA entered War in 1965, coinciding with sudden flaring up of sunspot activity them.

- In 1968, the peak Sunspot year, Warsaw pact countries invaded Czechoslovakia. In 1969, under threat of Nuclear War, US-USSR began Strategic Arms Limitation Talks (SALT).
- In 1965-67, with the rising Sunspot activity, the world saw escalation of U.S. involvement in Vietnam War, which reached to a ferocious magnitude in the peak Sunspot years

of 68-71.

- In April 1968, the peak Sunspot year, civil rights, leader Martin Luther King was assassinated, wide spread rioting followed in U.S. In June 1968, presidential candidate, Robert Kennedy, was also assassinated.
- July 1969, at the peak Sunspot activity, a break through came in Space conquest when Neil Armstrong became the first man to land on moon.

### **Middle East:**

- In the Middle East, high rising Sunspot period of 1967, brought Six-Day Egypt-Israel War, resulting in defeat of the Arabs.
- In the peak years of 68-69, Yemen sizzled with unrest and in 1970 it became independent after overthrowing of Monarchy.
- In 1971, Bahrain, Qatar, and UAE won their independence from Britain. Events of 1972, when sun was still quite active, brought the Arabs and Israel to war.
- In 1973 the fourth round of Arab - Israel war was fought in which the Arabs again suffered badly. They retaliated with oil embargo in 1973.

### **Indo-Pak:**

In the Indian sub continent, 1968 - 1969 the peak Sunspot years brought great unrest in Pakistan, street riots, abdication of Ayub Khan, martial law by Yehya Khan, turmoil in East Pakistan and finally 1971 Indo Pakistan War, East Pakistan separated as Bangladesh, 92000 Pakistani soldiers were made prisoners of war by India, Bhutto came to power as first Civilian martial Law Administrator in 1972, History's First Islamic Summit was held in Lahore soon after, use of oil as a weapon against West, were events of great magnitude under the influence of High sunspot activity. Things began settling down after 1972, with the declining of sunspot activity.

### **China:**

With the rising Sunspot activity, the Cultural Revolution began in China in 1967, which brought country wide turmoil, followed by terrible repression in 69-72. Things started settling down with the declining Sunspot years after 1973 and came to rest in 1976.

In June 1967, as sun was getting active, China also exploded its first Hydrogen Bomb.

### **Far East:**

In 1968, at the peaking of Sunspot activity, North Vietnam launched Tet Offensive, U.S. troops entered Cambodia in 1970.

In 1972 Ferdinand Marcos declared martial law in Philippines and became dictator.



In the declining Sunspot years 1973, cease fire in Vietnam and evacuation of troops begins, In 1975, when sun was very calm, US and USSR signed a treaty recognizing borders in Europe.

After 1973, the declining Sunspot years upto 1976, there was relative peace, treaties, and return of normalcy in most countries of the world. Even India's nuclear explosion in May 1974, caused no big ripple as Sunspot activity was then declining rapidly.

## 8.2 **Scientific Development:**

- Sunspot cycle rising years proved of great scientific significance. Following are some of the major developments:
- Man Landed on moon in 1969.
- Laser was developed into an important industrial and defense tool.
- Space race started between US & USSR.
- Micro electronics took a revolutionary turn. Advanced computer using microchips initiated a new scientific revolution in the world.
- Satellite communication revolution took birth in the peak sunspot years of cycle-20.

## SUNSPOT CYCLE-19

(April 1954-October 1964)

|                      |            |
|----------------------|------------|
| Max. Sunspots        | 201        |
| Max Time             | March 1958 |
| Min. Sunspots        | 3.4        |
| Min. Time            | April 1954 |
| Rise Period          | 47 months  |
| Fall Period          | 79 months  |
| Total Cycle duration | 126 months |

The Sunspot cycle-19 has been one of the most violent cycles in the recorded history. It was even more violent than the previous cycle of 1944-54. Peak value jumped from minimum value of 10 to 201 in 47 months, which is exceptionally high. However, rise period is relatively long, which helps to some extent reduce its intensity. Even then we should expect very explosive events on earth during this cycle.

### **9.1 Historical Developments And Analysis:**

As expected, the Sunspot cycle-19 proved exceptionally eventful for the human history. In this brief period, freedom movements intensified in most countries of the world, and as a result not less than twenty five countries won their freedom after hundreds of years of rule by western colonial powers.

#### **Space Age:**

The exceptional high sunspot activity of about 200 in 1958-59 also initiated the great revolution in the direction of space conquest and Intercontinental Ballistic Missile developments in the world.

#### **Vietnam War:**

In May 1954, as Sunspot started rising suddenly, the French suffered defeat at the hand of communists in Vietnam and the country was divided into North Vietnam controlled by Communists and French controlled South Vietnam. As the sun became further turbulent, in 1955-56 when rate of rise of Sunspot activity was abnormally sharp this conflict flared into Vietnam- USA war which lasted upto 1976.

#### **Nuclear Bomb Race:**

In 1955, a group of Scientists, including Einstein and Bertrand Russell took a great intellectual initiative and appealed for stoppage of warfare and warned against dangers resulting from testing of Nuclear explosions. This move became the stepping stone for

the creation of IAEA, Nuclear Disarmament, Test Ban Treaty and CTBT. However, race of nuclear bombs intensified rapidly between USA-USSR-France and Britain.

### **Greek-Turkish War:**

In 1956, when Sunspot activity had reached 150, Cyprus crisis British, Finally, trouble erupted between Turkey and Greece, supported by the resulting into bloody fighting among these countries. Cyprus became independent of Turkey in 1960. However, between Turkey and the Greeks has continued to this date.

### **France and African States:**

High rising Sunspot year 1956 also saw the end of French protectorate of Morocco and in the same year Tunisia became independent. In 1957, the Bay of Tunisia was removed and Habib Bourguiba became President of Morocco with the help of military.

The same year Russia invaded Hungary, and Khrushchev denounced Stalin at Communist Party Congress.

### **Revolution in Iraq:**

The peak Sunspot years of 1957-58 brought with them bloody revolution in Iraq. The King was deposed and murdered, lot of blood was shed in the streets. Finally Military took over the country establishing a revolutionary government which initiated many social and political changes and established one party dictatorial rule.

### **Egypt-Israel War:**

When the sun was experiencing explosive rise of Sunspots and solar flares, in September 1956 Suez Canal crisis came to surface, it was nationalized by president Nasser in Egypt. In October 1956 Israel invaded Syria and Egypt. Britain and France also attacked Egypt. War ended with intervention of UNO. However, this event had great impact in the later politics of Middle East.

### **USSR Upheavals:**

In October 1956, under the impact of the high rising Sunspot, revolution also broke out in Byelo Russia. Bitter fighting took place with troops sent by USSR. Revolution finally got suppressed by USSR in November 1956 with installation of a pro-USSR government there.

### **Algerian War:**

In the peak Sunspot year of 1958, when activity had reached 201, Algerian war of independence reached its peak also. Large scale riots started against occupation by French, as a result, lacs of people were killed, French government collapsed and De Gaulle

became president of France assuming dictatorial powers. Algeria won its freedom.

### **Pakistan:**

High sunspot period of 1956-57 was also full of trouble and agitation in Pakistan, resulting into Martial law by Ayub Khan in 1958, the peak Sunspot year.

### **Cuba-USA:**

The peak of Cycle - 19 also saw revolution in Cuba. Fidel Castro had launched guerrilla warfare in the rising sunspot year, 1956, as a result of which, in Jan.59, the peak Sunspot period, he finally overthrew Batista and established communist government under conditions of great turmoil and agitation.

### **China-USSR:**

Another major development during the high Sunspot 1958-59, was that it brought with it break of relations between of USSR and China, which proved of great significance in world history from, resulting into Sino Soviet Split in 1960. USSR-USA cold war between the two super powers of the world reached its peak.

### **African Continent:**

In 1960 when Sunspot was still very active in the heaven, fighting broke out in Belgian Congo with large scale tribal warfare and Army mutiny. Rebellion was suppressed after a lot of bloodshed. Only after the sun became calm in 1962, it began to subside. Also the year 1960, the Peak Sunspot year, brought with it riots in South Africa and, in protest, it left the Common-wealth.

### **US-USSR:**

In 1960, USSR shot down Francis Gary Powers and his U-2 spy plane. This accelerated the cold war between USSR & USA.

### **Middle East:**

Yemen, Civil War began in 1962, and the monarchy overthrown.

### **Great Independence Drive:**

Following countries won their freedom in the high Sunspot period of cycle-19 after strenuous struggle of freedom fighters:-

Morocco 1956, Malaysia 1957, Cyprus 1960, Gold Coast and Ghana 1957, Nigeria, 1960, Tansanyika, Zanzibar and Tanzania, in 1961, Uganda 1962, West Africa 1960, Congo 1960, and Algeria in 1962.

Due to continued struggle for independence in the sunspot cycle-9, following countries won their freedom in the declining Sunspot period of cycle-20:-

Kenya 1963, Nyasaland and Malawi in 1964, Rhodesia and Zanzibar in 1964, Guyana 1964, Malta 1964.

Kennedy became President of USA on Jan 20, 1961 after tough electioneering.

### **Indo-China Conflict:**

With the high Sunspot activity of cycle-19 conflict started between India and China in 1959, which finally resulted into full scale war on Himalayan Border in 1962.

### **US-Cuba Crisis:**

In April 1961, after U.S. sponsored invasion of Cuba, Nikita Khrushchev wanted to put ballistic missiles in Cuba in 1962. To counter it, in Oct. 1962 when Sunspot activity was still high, President Kennedy imposed a Naval blockade against the Russian ships. Cuba halted work on missile sites, and thus the danger of Atomic War was averted.

### **Europe:**

The peak years of cycle-19 were also explosive in Europe particularly for Germany. To restrain migration of people from East to West, finally Berlin wall was built in 1961.

### **Kennedy Murdered:**

President Kennedy was assassinated on Nov. 22, 1963. In the same year, USA increased its forces in Vietnam which later resulted into horrifying Vietnam war.

## **9.2 Scientific and Technical Developments:**

No doubt the peak years of 1957-59 were politically charged, but intellectually productive also. European Economics community EEC was founded in 1957. European parliament was also founded in 1958, which proved of great importance for the future of Europe. USA started its programme to send man on Moon. USSR started space satellites missions to Moon. Ballistic Missiles were developed by USA and USSR. France exploded its Atomic and Hydrogen bombs. Electronics revolution started with the developments of transistors and micro chip. Some of the major scientific achievements are mentioned below:-

The 1954-64 Sunspot cycle, particularly its rise period (1954-1958) proved highly productive for scientific achievements. Under the catalytic effect of high Sunspot activity, Sputnik-I, launched on October 4, 1957 by USSR, began the mankind's great adventure

to conquer space. USA launched explorer-I on Jan 3, 1958.

In August 1958 US nuclear submarine performed an epoch making voyage by traveling 2928 km under the Polar ice cap, crossed the North pole on August 3, 1958. The age of nuclear submarine was thus set in.

Christopher Cockerel of Britain invented the Hover Craft and world's first Hovercraft flight took place in 1959, crossing water, marsh land and flat land with equal ease, maneuverable on its air cushion.

The world's first Nuclear powered merchant ship was launched in the USA, introducing a new era in shipping.

World's first commercial Nuclear Power Plant, At Calder Hall got its start in 1957.

Laser was invented in 1958 by C.H. Towns, the first working laser was announced in 1960 in USA, opening a new era in welding, surgery, communication, computers, photography and electronic warfare etc.

Russian Alekseyevich Gagarin became the first man to orbit earth in the space craft Vostok-I on April 2, 1961.

USA launched the first communication satellite on July 10, 1962 to receive and transmit television pictures across the Atlantic. This was named Telstar which opened up new era in world communication history.

### **9.3 Analysis:**

The great historical and scientific developments of the Sunspot cycle 1954-64 correspond to our thesis that Sunspot activity effect the human behavior on earth. This was the most active solar period in the recent history and correspondingly we see it as the full of upheavals, most active and productive period on earth also. We have recorded 24 great events, including independence of about 16 countries taking place in a time period of six years of 1957-1962, the period when Sunspot activity was high and peaking with sharp rate of rise.

It is also seen that low Sunspot years i.e. 1954-56, and then 1962-64 proved relatively passive on earth also.

## SUNSPOT CYCLE-18

(February 1944 April 1954)

|               |               |
|---------------|---------------|
| Max. Sunspots | 152           |
| Max. Time     | May 1947      |
| Min. Sunspots | 7.7           |
| Min. Time     | February 1944 |
| Rise period   | 39 months     |
| Fall period   | 83 months     |
| Total Period  | 122 months    |

Like cycle-17 cycle-18 was also a very explosive period for the sun, one of its special feature was that it had abnormally high rate of rise of Sunspot activity reaching from 7 to 150 in just 39 months. The fall period was also long enough, about 83 months, showing persistence of Sunspot activity for longer time on the earth. The sharp rise to high peak means correspondingly a period of great upheavals, agitation and of politically explosive events. Side by side it should also be the time for great scientific-technical and creative achievements on earth.

### **10.1 Historical Development and Analysis:**

Sunspot cycle of 1944-1954 proved a period of cold war, emotional agitation's, great initiatives and of far reaching historical events. It saw the great process of independence and break of centuries old colonial rules of the West. The sudden sharp rise of sunspot activity in 1945 brought with it the first Atomic war on mankind. In general it can be said that it was more eventful period than 1933-44.

Historical evidence suggest that events of 1945 to 1948 corresponded with the rapid rise of Sunspot activity i.e. the rate of occurrence of the world shattering events was more or less proportional to the rate of rise of the Sunspots. Great events of 1947, 1948 1949 and 1950-51 corresponded with the high peak of Sunspots. After 1952, events began to subside correspondingly with the declining period of Sunspots in the heaven.

As expected, Spring & Autumn seasons proved more eventful than the rest of the year because sun relays maximum magnetic radiations in these months.

As for the scientific developments, major creative developments also corresponded well with the rise period of Sunspot. The peak Sunspot period proved of lesser positive achievements because of greater emotional energy and consequent turmoils on the earth.

High Sunspot period of 1947-51 brought down the centuries old Western colonial power in the world and with it came the independence of Pakistan, India, China, Indonesia,

Burma and Ceylon.

In the following paragraphs is given the historical record of events and their correspondence with the Sunspot activity.

## **10.2 Historical Data:**

The Sunspot began to increase at rapid rate after reaching minimum in 1944 bringing with it end of world war-II in Europe and a starting a great period of reconstruction. In Feb. 1945 the Yalta Conference held in Crimea attended by Roosevelt, Churchill, De Gaulle and Stalin decided on surrender of Germany. However, with the rising Sunspot and unusual flares in 1945, US dropped Atomic Bombs on Japan in August 1945, after which it also surrendered unconditionally.

In April 1945, delegates from 50 countries met at San Francisco in USA to draw up the charter of UNO. The year 1945 also saw the landslide labor party victory in UK, defeat of British war hero Sir Winston Churchill and with it began the idea of a modern welfare state in the world.

In 1946, began the war of independence in Vietnam, with bloody clashes between people and the government troops. In Europe 1946 brought Communist success in French parliament which caused great agitation in that country, resulting in removal of govt. in May 1947.

The rising Sunspot year of 1946 brought with it large scale bloody communal riots in India, which forced the British to give independence to the Subcontinent. On 14<sup>th</sup> - August 1947. Pakistan and India won their freedom after 150 years of British rule. However under the influence of very high Sunspots activity it was associated with unprecedented Hindu-Muslim riots. As a result great population migration took place, about 20 million person were dislodged, and more than two million were killed in communal riots. War in Kashmir between India and Pakistan also began in 1948 and continued unabated in the peak Sunspot year of 1948-49. Indian leader Gandhi was murdered by a fundamentalist Hindu in India on 9th Feb. 1948.

Philippine won its freedom in 1946, Freedom movement in the rest of Far Eastern countries also intensified.

USSR established its own style of governments in Bulgaria & Romania in 1946 by force also.

In 1946-48, when sunspot activity was peaking up communists parties dominated almost all European countries except Turkey and Greece.

The peak years of Sunspot, 1947-49 not only brought revolutionary changes in India, Pakistan and China, the world also saw the break up of Korea into two countries and beginning of the terrible Korean Civil War which lasted for many years.



Burma gained independence in 1948. In Eastern Europe communists took over Poland, Czechoslovakia in the same year.

With the rising Sunspots 1945-46 struggle between the Communists and the Nationalists intensified in China. In the maximum Sunspot year of 1948, Mao Ze-Dong proclaimed Chinese Peoples Republic on October 1, 1948, after Nationalists forces had suffered a series of defeats at the hands of the communists. Chiang Kai Shek fled to Taiwan in March 1949. Thus a new shift started in the history of China.

Communist North Korea invaded South Korea in June 1950 which resulted into terrible war. USA helped the South and China the North Korea. This bloody fighting continued till March 1953 when Sunspot activity had sufficiently declined, and UNO intervened and established peace.

In the peak Sunspot year 1948, USSR also captured Manchuria, and set up communist rule in North Korea.

Chinese communists, after coming to power in 1948, extended their rule to Tibet in 1950.

In the Middle East, the high Sunspot year of 1948 brought Israel into existence with partition of Palestine, sowing seed of perpetual hatred and quarrels in that region. The maximum Sunspot year 48-49, brought also first Arab - Israel War.

In Egypt Hasan-ul Banna, Leader of Muslim Brotherhood was assassinated in 1949, causing serious riots throughout the country. In the following year, king Farooq of Egypt was forced to abdicate. Military troops led by Junior officers occupied the govt. in May 1953, subsequent to which Jamal Abdul Nasser became the President of Egypt.

In the high Sunspot year of 1949, NATO was formed in April to counter USSR, and thus began the period of lengthy cold war in the world. Establishment of the German Federal Republic also took place in April 1949.

Another significant feature of cycle-18 was that Libya won its independence in 1951,.

In 1952, when the sun was still quite turbulent, workers rebelled against communists rules in Poland and Hungary. Russia crushed this anti-Communist rebellion in 1953 Soon after Stalin died in March 1953. Anti Communists feelings rising in 1952 in East Germany were crushed by soviets intervention in August 1953.

As turbulence subsided in the sun after 1952, events began settling down on earth also. In the low sunspot period, occasional disturbances can be attributed to the after effects of the events of 1948-52, and sudden eruption of solar flares.

### **10.3 Scientific Developments:**

Period of cycle-18 is also associated with great reconstruction process after World War-II. Many great scientific achievements and discoveries were also stimulated in the high Sunspot period of cycle-18. Dead sea scrolls, concerning the earliest records of Christ were discovered in 1947, 12 K.M south of Jericho.

1947, a Norwegian scientist started the expedition from Callao in Peru on a raft made of locally grown balsa wood to sail across the Pacific Ocean to Polynesia, 8000 K.M of ocean, to simulate the mode of sea travel of the pre-historic times.

In 1948, Mount Palmas's Reflecting Telescope, was set up which was the largest telescope till then.

In August 1949, USSR tested its Atomic Bombs. Hydrogen Bomb was tested in the pacific by USA in 1952.

Conquest of Mount Everest, 8820 meter high, was achieved by Edmund Hillary of New Zealand on May 29,1953.

Discovery of DNA structure in 1952 by Francis Crick and James Devey Watson, was made, so opening the unlimited possibilities of Genetic Engineering.

In Nov. 1953 Foundation stone was also laid to enlarge the prophet (PBUH) Mosque in Madina Tul-Manawra, Saudi Arabia.

With the discovery of Transistor the great Electronic Revolution began in the world in the high sunspot activity of cycle-18.

## SUNSPOT CYCLE-17

(Sep 1933-Feb.1944)

|                     |            |
|---------------------|------------|
| Peak sunspots       | 120        |
| Peak sunspot period | May 1937   |
| Min. sunspot        | 120        |
| Min. Sunspot years  | Sep 1933   |
| Rise time           | 43 months  |
| Fall time           | 82 months  |
| Total cycle period  | 125 months |

As compared with the previous cycle-16 we see cycle-17 a violent cycle. Ratio between these two successive cycle is about 1:53, which is indeed very high signifying a big change in the events of the world. Peak value of Sunspots was not only high but rate of rise to peak was also very fast and it stayed there for nearly two years, then started gradually declining reaching minimum in 82 months, meaning that the net solar activity tended to persist for a longer time.

Thus Sunspot cycle-17 of 1934-1944 proved an abnormally violent cycle, on earth, with a quick rise to peak value of 120 Sunspots in about three and half years. It was an abnormal period with regards to solar flares also, Particularly period of 1936 to 1942 were the years of fast activity in the sun which brought unprecedented storm in the world affairs. The most turmoilfull years were 1937-40 when Sunspots and solar flares were violently high and correspondingly there occurred explosive events on the earth.

### **11.1 Historical Development and Analysis:-**

Let us now go through the historical records of the world war-II briefly. (for details please see Appendix-I.) It all started with Hitler's occupation of Rhineland in 1936 (the year when Sunspot activity had started rising at abnormal rates) and building of a series of fortifications to protect German frontiers in time of war. Events got further pushed in 1937 when Sunspot activity was about 100, Hitler annexed Austria and Czechoslovakia and in March/April 1939 when the sun had already peaked to maximum, flames of war were hanging all over Europe. Germany invaded Poland. As a result, Britain and France declared war on Germany in Sept, 1939.

Thus World War-II began in Sept: 1939, when Sunspot activity had reached its peak and Sun was oriented to earth to send max solar magnetic radiations. At this time USSR invaded Poland. All these events can be attributed to the emotional turmoil and lack of rationality of the world leaders then, under influence of very high solar magnetic storms on the earthly people. Attack of Germany on Russia illustrates the same spirit of violence. In April, high magnetic month, Italy declared War on France. In May - June 1940 Germany occupied Channel Island. In August 1940, the high magnetic month, began the battle of Britain.

After 1941, Sunspot activity started declining at slow rate, but it was still high enough to continue heat of war on earth. Subsequent to 1941 till 1944, there were occasional out bursts of abnormally high solar flares, which added to the violence. However, in the declining years of Sunspots in the European theater we see war slowing down, accompanied by restoration of peace and surrender of aggressor countries.

As for the American Atomic Bomb attack on Japan, it actually occurred at the beginning of cycle-18, when there was once again sudden rise in solar flares in the months of July to August 1945.

It is also noteworthy that almost 80% of the events of the Second World War are seen to have been initiated in the Autumn and Spring seasons, reconfirming our theory that these are special months for agitation, aggression and charged emotions and always bring with them excessive activity in every sphere of life. This will be apparent from the following summary of events:-

## **11 .2 Summary of Events:**

Following is the summary of the major events of 1933-1944:-

- Hitler became Chancellor of Germany in March 1933 in a volatile situation between Nazis and German Communists.
- 1934 also saw the war between King Abdul Aziz of Saudi Arabia and Iman Yahya of Yemen.
- Revolt in Austria by Nazis in July/Sept. 1934. As a result Austrian President was murdered.
- Italy invaded Ethiopia in October 1935 and annexed it in May 1936.
- March 1936, Hitler took over the demilitarized zone of Rhine in defiance of League of Nations. In the same year there was serious revolt in Morocco.
- July - August 1936, fast rising Sunspot activity, Spanish Civil War begins.
- Feb. 1936, military rebellion to over throw emperor Hiro-hito in Japan. Rebels defeated and were killed, and rebellion crushed.
- Jan 1937, (Sunspots peaking up) Stalin purges opponents in USSR.
- August 1937, (peak Sunspot activity) the Japanese take over Beijing.
- Nov. 1937, Peak Sunspot year, the Japanese capture Shanghai.
- March 1938, (peak Sunspot) Mexico disputes US on British oil fields.
- March 1938, Peak Sunspot activity, Germany annexed Austria.
- April 1938, (peak Sunspot) German origin people in Czechoslovakia declared unilateral independence.
- January 1939, (peak Sunspot) Atomic Fission achieved. March 1939, Germany annexed Czechoslovakia.
- April 1939, Britain invaded Ethiopia and occupied it.
- Sept 1939, (Sunspot still at peak) France, and Britain declared war on Germany. Soon war flames engulfed the whole of the world and it turned into a world war.
- Sept. 1939, Germany invaded Poland and took it over forcibly.
- April 1939, Germany invaded Denmark and Norway and occupied them forcibly.
- April 1939, Italy annexed Albania
- March 1940, (High Sunspot and high magnetic radiation) Finland surrendered to USSR.
- April 1940, Germany invaded Denmark.

- June 5, 1940, Germany launched a big attack on France.
- June 10, 1940, Italy also declared war on France.
- July 1940, German invaded Britain by V-2 bombers.
- August 1941, (High magnetic field) battle of Britain began with bombing of London.
- April 1941, Britain invaded Ethiopia and took it over.
- August 1941, Raza Shah of Iran was forced to abdicate in favour of his son Muhammad Raza Shah.
- Sep. 1942, Battle of Stalingrad begins Germany launched V-2 bomber attack on Britain.
- Dec 7, 1941, Japanese aircraft launched attack Pearl Harbor. US enters War against Japan.
- Dec 10, 1941, USA declared war on Germany.
- March 1942, Japan occupied half of South East Asia including Malaysia, Singapore, Indonesia, Philippines and invaded Burma.
- First American success against Japan was achieved in May-June 1942.
- Desert War in Middle East began in Sept 1940, (high magnetic field) when Italian army from Libya invaded Egypt. This war continued till end of world war in 1944.
- April 1943, (Sunspot activity had declined) massacre in Warsaw ghetto by Germans.
- Sept 1943, (Sunspot activity had declined) Italy surrendered to allies.
- June 1943, Gen. Peron came to power in Argentina.
- Sep. 1943, U.S. troops invaded Italian mainland.
- June 6, 1944 (Sunspot activity at minimum) allies invaded and freed France from Germany.
- June 1944, D-Day Normandy Landings, and allies victory.
- May 1945, (Sunspot once again begin to rise) Germany surrendered to allies.
- August 6, 1945, (rising Sunspot activity and solar flares) Americans dropped atom bomb on Hiroshima, three days later, dropped atomic bombs on Nagasaki.
- August 14, Japan surrendered unconditionally.

## SUNSPOT CYCLE-16

(August 1923-Sep.1933)

|            |             |
|------------|-------------|
| Max value  | 78          |
| Peak Time  | April 1928  |
| Min value  | 5-6         |
| Min. Time  | August 1923 |
| Rise time  | 56 months   |
| Fall time  | 61 months   |
| Total Time | 121 months  |

### 12.1 Historical Developments and Analysis:

As for Sunspot activity, cycle 16 was far calmer than cycle-15, and cycle-17. Peak activity reached 78 in April 1928. Rate of rise of Sunspots was also quite slow. Consequently, events of 1923-27 on earth also showed signs of peace and passiveness. After 1926 we begin to see some fast turbulence in the sun with Sunspots at about 60. Thus we see some corresponding hot activity on earth also, for example general strike in UK and direct confrontation between trade unions and owners of factories took place in 1926, which to some extent disrupted industrial peace in that country.

In 1926, in the rising phase of Sunspots, King of Najad and Hejaz, Abdul Aziz Ibn-Saood also established kingdom of Saudi Arabia, bringing a big change in the history of Middle East.

In 1926-27 when Sunspots were reaching to their peak, Chiang Kai Sheikh took over Peking after bloody fighting with Communists. This was the beginning of a long war between the Nationalists and the Communists lasting up to 1949.October.

In 1928 (the peak Sunspot year) first five years plan was launched in Russia against explosive situation in the country. There was all over turmoil Govt. reacted violently killing thousands.

In 1928, when Sunspot activity was at its peak, Turkey was declared a secular state after over throwing of monarchy by the army. In the same year Hasan-ul Banna in Egypt founded the Muslim brotherhood movement which had profound effects on the future events of Middle East.

In may 1829 when sun was still very active, there began another great Turmoil in Russia. Major offensive against farmers was launched by Stalin which in next three years brought death to millions of peasants. Famine like conditions prevailed all over Russia.

The peak Sunspot period of 1928-1829 brought the Wall Street economic crash

on Oct. 24 1929, disaster hit the USA stock exchange. With this started the world wide economic depression that was to bring misery and famine to millions in the next few years. By 1932, world trade had shrunk by half.

In 1929-1930 when Sunspot activity was on decline but still high, the world also saw the Nazi rise in Germany. Masses became violent against the establishment, and there were frequent street fights and clashes with Govt. troops.

1928-29 was a period of turmoil in India, resulting into Round table Conference in London to discuss the future of India in 1930.

After 1930 as the Sunspot activity had begun to decline, so was the case of the violent events on earth. World economic crisis began to subside. Other routine events were:-

In 1932 Franklin Roosevelt was elected president of USA.

Hitler came to power in Germany in Jan. 1933.

The minimal Sunspots year of 1933 was followed by sudden rise of activity in the sun, in 1934 and with that Hitler reassumed dictatorial powers in August 1934.

## **12.2 Scientific Development:**

The slow rising Sunspot activity between 1923-1928 proved highly productive for scientific research on earth.

In 1926, the Scottish engineer John Baird (1888-1946) invented television. The first talkie film was invented in 1927 in USA.

In 1927, Linden Berg of USA demonstrated Atlantic solo flight and made world record in the history of aviation on 20th May 1927.

In 1928 Scottish scientist Alexander Fleming (1881-1955) discovered Penicillin, the first effective antibiotic.

In the declining Sunspot year of 1932 Sir Malcolm Campbell the British racing driver broke the speed record to exceed 409 KMPH in his motor car.

Sir John Cockraft (1897-1967), the British scientist succeeded in splitting Atom in April 1932; opening gate of Atomic Energy and Atomic weapons.

## **12.3 Analysis:**

Sunspot cycle of 1923-33, started at slow rate, bringing relative peace, and calm over earth. Historical records of 1923-27 show that situation on ground also remained quite cool, fast recovering from the effects of the world war-1. Historians call

this period an "Era of Treaties of Friendship". However, after 1926, emotions had begun to rise high when Sunspot activity had risen over 50. Great strike in Britain in 1926 is an indication of uprising of emotions.

In parallel, there began the rise in mental activity also. For example, great inventions such as T.V (1926), Talkie film (1927) Penicillin (1928) took place in the Sunspot rise period of 1928-1931. However, during 1927-1931, when Sunspot activity was near peak we observe the world agitating with uncontrolled emotions and rise in negative achievements of man on earth. Start of uncontrolled unrest in China, Russia, and great economic depression in USA, rise of Nazi power in Germany, communal riots in India were some of the explosive events of great concern for mankind on earth for this relatively high Sunspot years of cycle-16.

Beginning 1932 when Sunspot activity had declined sufficiently, the heat on earth also cooled. In 1931-32, when Sunspot activity was declining but still high enough, we see rise in the positive achievements of man signified by the discoveries such as splitting of atom, and new development in racing cars etc.

Thus in the Sunspot cycle 16 once again we find a very good correspondence between the world activity and solar activity. It is also noteworthy that major events occurred in the months of Spring and Autumn, the peak annual magnetic months for earth.



## SUNSPOT CYCLE-15

(August 1913-August 1923)

Whereas Sunspot cycle-14 of 1902-13 was passive Sun reactivated, in cycle-15 maximum activity rising to 105 in August 1917. The ratio between the successive cycle peak exceeded 2.1, meaning a big change over the routine of cycle 14. . The most significant feature of this cycle is that it was a very quick cycle, lasting only ten years, much less than the average of 11.3 years; Also its initial rate of rise was abnormally high. **In** just one year of 1913-14 it reached to 1.5 from minimum of 05 which is a big leap, forecasting abnormal happenings and sudden changes on the earth also. After 1914, there was slight slowdown for one year. Then again from 1915, we see sudden shooting up of the Sunspot activity from 75 to 105 in the year 1916-17, bringing with it corresponding heat in the worldly events in this period. The fall rate was also abnormally sharp after 1918. By the beginning of 1919, activity had dropped to 50, indicating that turmoil on earth would settle down quickly after 1918. Following is the summary of major parameters of cycle-15.

|                    |                        |
|--------------------|------------------------|
| Max. Sunspot value | 105                    |
| Peak Time          | August 1917            |
| Min Sunspots       | 1.5                    |
| Min Time           | August 1913            |
| Rise period        | 48 months              |
| Fall period        | 72 months              |
| Total period       | Ten years (120 months) |

### 13.1 Historical Development and Analysis:

Historically, the Sunspot cycle-15 (1913-24) proved highly turbulent on earth. **It** saw the first World War-I beginning in 1914, a period of abnormally sharp rise in the Sunspot activity, details of which have been discussed in Annexure-I.

It is to be noted that the rapid rate of rise of Solar activity between 1914 and 1918, corresponds to the unfortunate events on earth.

Besides the world war-1, the earth also saw many other events of far reaching effects. In March 1916, Irish people revolted against the British for independence. Rebels surrendered in April 1916. Same year Australia and Newzealed also jumped in world War-I on the side of Britain.

In the Middle East, Arabs with the help of the British revolted against Turkish Khiliafat in 1916-17. In 1916 Lawrence of Arabia took active part in attacking Hijaz railway to cut off Turkish access. Damascus was also taken out of Turkish empire in 1918. Jews entered Jerusalem, in the peak Sunspot year, a move which finally resulted in the creation of Israel in 1947.

## **Soviet Revolution:**

Besides world war-I, the maximum Sunspot years 1916-1918 saw the most significant event of the century as Communist Revolution in Russia. Civil war in the country had picked up with the rising Sunspot activity. the Tsar abdicated in March 1917 and finally in Oct. 1917, Soviet communist rule was established in the peak Sunspot year of 1917. In 1919, Russia attacked Poland. USSR was finally established in 1923.

It is to be noted that 1917 was the year of Sunspot maximum, and correspondingly, there occurred the century's most violent revolution in Russia by communists, which profoundly effected many other events of the world. Similarly, Arab revolt of 1916 against the Turks, separation of Damascus from Turks, then conquest of Palestine by the British and start of migration of Jews to Palestine in 1917-18 and then the formation of Fascists parties in Italy and Germany proved to be world shaking events. All these happened between 1916-18 the peak Sunspot years of the sun.

### **13.2 Summary of Events:**

Following is the summary of significant events of the Sunspot cycle-15.

1912. The Muhammadiyyah reform movement emergence in Indonesia.

1914. (The rising Sunspot period) Tension mounts among European countries for power and influence in the world.

1914. 1918. World war-1 events. (see appendix-a

1916. Easter rising of Irish against British. Rebels surrendered on April 30, 1916.

1916. (Near peak Sunspot activity) The Arabs revolt against the Turks in which Lawrence leads attack on the Hejaz Railway.

1917. USA enters war on April 6, 1917. (The peak Sunspot activity) 1917. General Allenby, enters Jerusalem. a beginning made for state of Israel. 1918. Damascus is taken and agreement is signed with the Ottoman

Empire on 30th Oct. 1918.

1918. The end of first world war.

1917. 1918. Bolshevik revolution in Russia, In Oct. 1917. czar Nicholas deposed. (The peak Sunspot year)

1917. Balfour declaration, British promise Jewish home in Palestine. Jerusalem taken over by British in Dec. 1917.

1918. Czechoslovakia and Poland became independent.

1919. Formation of Fascist parties in Italy and Germany.

1920. the League of Nations established on Jan 10, 1920.

1921: Formation of the Irish free state.

1921 British make sons of Husayn, the Sharif of Makka, Abdullah and Faysal kings of Jordan and Iraq respectively.

1922. Egypt becomes independent.

1917-21 (The high Sunspot years). Revolt in Turkey. Ottoman empire

finished after 800 years of rules in parts of Asia and Europe.

Turkish free state setup in 1921. Turkey became republic in 1923.

Kamal Ataturk became secular President, separated state and religion, forbade Islamic rituals and ways of life.

1923. Hitler imprisoned.

1924. Death of Lenin in Russia Jan 1924.

1924. King Abdul Aziz conquers Makkah and Madina, Kingdom of Najad unified with Hijaz.

1925. Raza Khan seizes the Government in Iran and establishes the Pahlavy Dynasty with the help of the British. -

In general the events after 1920 began to settle down and occasional outbursts may be attributed to the settling effects of the world war-I, and occasional Sun flares. -

### **13.3 Scientific Development:**

We also see striking correspondence between Sunspot activity and scientific activity. Publication of Einstein's general theory of relativity in 1915, is the great scientific discovery of the century.

1913. German physicist Geiger Meuller invents Counter to detect radiations, called Geiger Counter.

1915. Einstein's theory of General Relativity was published. 1916 Panama Canal opened.

1919. Alcock and Brown made history by nonstop crossing Atlantic ocean by air.

1919. Rutherford performed experiments on Atomic disintegration leading to Atomic Fission.

1922. Tutankheimun tomb was discovered on Nov. 4, 1922 in Egyptian pyramids.

## SUNSPOT CYCLE – 14

(Jan 1902 - August 1913)

Sunspot cycle-14 (1902-1913) was a relatively mild period in the sun. Maximum value of 64 was reached in 1906 which was lower than the previous cycle by 28 points, However, it stayed there till 1908, and rate of fall was also abnormally slow. As regards the rate of rise to maximum it was also slow as compared with the previous cycle-13. Thus, one can conclude that, on the whole, this was a calm period for the sun and therefore, we should expect relative calmness on earth also. Following is the summery of major parameters of cycle-14.

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 64         |
| Min. Sunspot value | 3          |
| Peak Time          | Feb 1906   |
| Min Time           | Jan 1902   |
| Rise period        | 49 months  |
| Fall period        | 90 months  |
| Total              | 139 months |

### 14.1 Historical Development and Analysis:

Let us now analyze the events on the ground to see the correspondence with the events in the Sun. The most violent event of this period was the Russia-Japan war.

In Feb. 1904, the year of rising Sunspot activity, without any warning the Japanese attacked a Russian Naval fleet. Russians were defeated near Yalu river between Korea and Manchoria. Humiliated Russia made peace with Japan in Sep. 1906. This was one of the very few wars of recent history in which an Asian power had defeated European power.

1905, the year of high Sunspot activity, also brought large scale unrest in Russia. On 20<sup>th</sup> Jan. 1905 troops fired on anti-government demonstrators in Saint Peters-Burgh killing thousands, turmoil continued throughout 1906.

In 1905,when Sun was peaking high, Norway achieved its independence from Russia. Same year the British conquered Cape colony. On April 18, 1906 the peak Sunspot year, one of the most terrible earthquake came in Francisco USA. 2000,000 became homeless in a few seconds. 1904-1907 was also a period of turmoil in Turkey. In 1908, when Sunspot activity was still high a group of army officers under the name of Young Turks revolted against the Ottoman Caliph and wanted to impose western style secular government in Turkey. The incident had a far reaching impact on the

dismemberment of Turkish Empire after World War-1.

Other routine events were:-

In 1908, Belgium annexed Congo in African Continent. Same year British and U.S. outlawed slave trade, and Austria annexed Bosnia Herzegovina. 1910 saw Portuguese revolution.

Period of high Sunspot activity between 1904-1908 proved bad for China. As a result of this struggle, Sun-yat succeeded in declaring China a republic in 1911. Spanish American wars of independence started in 1910. Consequently, in South America, Para-guay became independent in 1911.

## **14.2 Scientific Developments:**

As regards scientific developments, in this case also we see close correspondence with the rising Sunspot activity. In 1903, when sun was rising active, Wright Brothers demonstrated the first airplane flight, and ushered the Aviation Revolution. In the following five years there was seen great activity in the aviation industry.

In 1905, the peak year of Sunspot activity, Einstein published his special theory of relativity initiating a great scientific revolution.

In 1905 also began the Sufiyyah movement for enlightenment in Iran.

In 1906 first radio broadcast station was setup in USA.

Henry Ford began his car factory in 1906 (the peak Sunspot year) and first Model-T car was out in 1909. In 1909 explorer Peary reached North Pole.

It is to be noted that majority of scientific and technical development took place in the peak sunspot activity period which was less than 70 in this case. In the subsequent years of this cycle when Sunspot activity had reached low ebb, we do not notice any significant development in science and technology. It began to pick up after 1913 when sun once again experienced sharp rise in its activity with the beginning of cycle-15.

## Chapter-15

### SUNSPOT CYCLE-13

March 1890 - Jan 1902)

Cycle-13 was a normal period for the Sunspot activity, as was the previous one. Maximum activity occurred in Jan. 1894 with 88 Sunspots. Rate of rise of activity was also about normal. However, fall rate was quite slow, meaning that Sunspot activity persisted for a longer period i.e. eight years (1844 to 1902). High crisis years were thus 1892-96 the period when yearly average of Sunspots remained more than 50. Following is the summary of its major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 88         |
| Min. Sunspot value | 5.0        |
| Peak Time          | Jan 1894   |
| Min. Time          | March 1884 |
| Rise period        | 46 months  |
| Fall period        | 96 months  |
| Total              | 142 months |

In the light of the above data we can say that cycle-13 would be slightly more active than the previous cycle-12 (1876-1889). Let us now look into the historical developments of this period to verify any correspondence.

#### 15.1 Historical Development and Analysis:-

##### Europe:

Period of 1890-93 was of cold war in Europe but no serious clashes took place, which may be attributed to low Sunspot activity in these years. After 1893-94, when activity of Sunspot began rising sharply, things became active on earth also. Between 1892-94, in the rising high Sunspot years, great deal of tension developed in Germany. To counter it, Russia and France formed an alliance against the alliance of Germany, Austria and Hungary. U.S. took over Spain's possessions in Australia 1893-94.

##### China:

On the other side of the globe, in 1894 when Sunspot activity reached its peak, China and Japan went to war, and Korea was lost to Japan. Meanwhile, alliance of British, Russian and Germany attacked China and grabbed a lot of Chinese territory.

In the same high Sunspot period Britain and France started fighting in Egypt, Sudan, Morocco and Tunis. The high Sunspot activity in 1893-96 is also associated with economic

slump in Eastern Europe, poor harvest and industrial unrest. It is to be appreciated that cycle-13 is also the cycle of reversed magnetic field. Thus food shortage and poor harvest was but natural for this cycle.

In 1896 Lord Kitchener defeated Mandist forces in Sudan and thus the British got themselves firmly established in Sudan and took over Sudan in 1899. In 1896, in battle of Adowa, Ethiopians defeated Italians.

### U.S.A:

In the American Continent , Spanish-USA war began in 1896 when Sunspot activity was still quite high and continued through 1898 mildly. In Sep. 1901 William Melaney President of USA was murdered and Roosevelt became president, the youngest president in the history of USA.

## **15.2 Scientific Developments:**

We see that the moderately rising Sunspot activity period between 1892-94 and the not too high peak period of 94-96 proved very active for science and technology on earth.

Diesel invented his engine in 1892, which revolutionized transport sector.

First glider flight was achieved in Germany in 1893 by Lubbock.

First ever **Voyage** to North Pole started in 1893 .

Marconi of Italy succeeded in inventing wireless transmission in 1894 and sent his first wireless message across Atlantic in 1895.

In the same year Cinematograph was pioneered in France.

1895, was also the year of discovery of X-ray by Roentgen.

Also in 1895, Freud started his experiments in Psycho-analysis,

Michelin got a patent for his invention of rubber tyres for vehicles in France in 1895. In the same year the canal connecting North sea and Baltic sea was opened.

In 1896 Alfred Nobel established his prizes in Sweden. In the same year Olympic games were reintroduced in Athens.

It is obvious that Sunspot cycle-13 proved active for science between 1892 to 1896, particularly the moderately high solar activity years of 1894-95 were times of exceptional scientific developments on earth. It is due to its not too high peak, and long dilation of 142 months. It is also to be noted that after reaching maximum in 1894, the declining Sunspot activity had persisted for longer period of eight years (1894-1902) whereas normally



the fall period is about  $6 \frac{1}{2}$  years only. Thus if we take the area under the curve, from energy point of view, cycle -13 was a high Sunspot activity period in heaven and due to its moderate peak, minds did not go out of control. This type of cycles is ideal for scientific and political development on earth also.

## SUNSPOT CYCLE-12

(Dec. 1878-March 1889)

The Sunspot cycle 1878-1889, was of much lesser intensity than the preceding cycle of 1867-1878, Peak value reached in 1882 to only 75, but it stayed at this value for unusually longer period, almost four years, meaning concurrent unusual happenings for the world. Initial rise rate was also slow. Following is the summary of major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 75         |
| Min. Sunspot value | 2          |
| Peak period        | Dec.1883   |
| Min Period         | Dec.1878   |
| Rise period        | 60 months  |
| Fall period        | 75 months  |
| Total              | 135 months |

Being relatively a passive cycle, one would expect the world to be less eventful between 1878-1890. The likely crisis years should be 1880-1885, when the activity in the sun first rose and then stayed high between 1882-85. However due to its longer duration but moderate peak, it should be a scientifically productive period. Let us analyze the situation on ground.

### 16.1 Historical Development and Analysis:-

In 1879, when Sunspots started rising fast, in Africa Zulu tribes challenged the British might. But as expected, the British crushed Zulu. There were rival clashes between Dutch and British also. In the same year, in a land far distant from Zululand, Britain also clashed with Afghans. Crisis continued for many years to come. In 1881, when Sunspot was approaching maximum the British and the Dutch clashed over South Africa with British victory. In the following year, in the high Sunspot period, Sudan's armed struggle against British resulted finally into killing of General Gordon in 1885 in Khartoum. 1878 also began with Russo-Turkish 1895 war. Situation worsened in Russia to the extent that Tzar Alexander-II of Russia was murdered. The peak sunspot years also brought with them Serbian Bulgarian war in 1885-86.

Years 1881-83 (rising Sunspot activity) brought large scale turmoil and changes in Muslim African lands of Tunisia, Egypt and Sudan. The French occupied Tunisia, the British occupied Egypt and Sudan. To save their freedom and religion, Mandi Sudani launched Jihad movement against the British which later inspired many other lands also.

In 1883 when Sunspot activity was at its peak of 75, the world saw the great clamity in the shape of volcanic activity in the Indonesian Island of Karakato. The sound of blast was heard as far as Australia. Volcanic ashes and gases filled the upper atmosphere for

several years, which had serious effects on the environment of the Far Eastern countries. About 36,000 persons died by drowning in sea waves caused by volcano.

After 1885, Sunspot activity began subsiding which brought corresponding calmness on earth also. Thereafter, no event of great importance occurred in the remainder period upto 1890 of the Sunspot cycle-12.

## **16.2 Scientific Development:**

On the scientific side it was a highly productive cycle. Some of the great inventions and discoveries of this period are:-.

- Bell patented the telephone in USA in 1876
- Thomas Edison got the patent of phonograph in 1878.
- Swan demonstrated electric light bulb in 1878 after years of effort.

## SUNSPOT CYCLE-11

(March 1867-Dec.1878)

Sunspot cycle-11 was much more active than the cycle-10. Peak value shot up to 140 in August 1870 in just 41 months. Ratio of successive peak was 1:41. Rate of rise of cycle-11 was also sharper than the previous cycle and same is the case with the trend of falling values. Going minimum, it took about 100 months, i.e. rate of decline was very slow. This means that it would be a violent period for the sun and we should expect lot of activity on earth also.

Following is the Summary of the major parameters:

|                    |             |
|--------------------|-------------|
| Max. Sunspot value | 140         |
| Min. Sunspot value | 5           |
| Max Time period    | August 1870 |
| Min Time period    | March 1867  |
| Rise period        | 41 months   |
| Fall period        | 100 months  |
| Total              | 141 months  |

### 17.1 Historical Development and Analysis:-

The period of rapid rise of Sunspot activity from March 1867 reaching 140 in August 1870 proved to be the period of heating up of events on earth also.

- The rise period of 1868-69 is significant for the Meiji Revolution in Japan when the Japanese overthrew the repressive imperial dynasty of Shogun and established the Meiji Monarchy which started the industrial revolution in Japan on the pattern of Europe.
- *1869 when Sunspot activity was approaching near maximum value, proved significant for Asia and Europe when Suez canal was completed, thus opening a new era of trade and communication between the East and the West. In the high rising sunspot era of cycle-11. Cretans revolted against Turks in 1867-68. Britain annexed Lesotho in Africa in 1868, North German confederation established in 1871, Italy unified in 1870, Russians attacked France, Paris was seized in 1870-71.*
- In August 1870 when Sunspot activity rose to its max. value of 140 and stayed about this value up to the end of 1871, we see immense political disturbances, turmoil and fighting in the world. Some of the major events were the following:-
- *France was fighting Russia which brought disaster for the French Monarchy. Consequently, in 1870, France was declared a Republic. In the same period Germany emerged as a new power in Europe, German Empire (Second Reich) was created, which greatly influenced the later events of history in that Continent. Meanwhile, the French power collapsed due to anarchy. In March 1871 about 26000 workers were killed in the uprising against government. Same was the case for Italy, whose unification was completed in 1870.*

- *In the Period of 1870-73 (Still high Sunspots period) the Balkan state fought against Turkey with the support of Britain and Russia, resulting into a lot of misery and turmoil in the Eastern part of Europe. This shattered the Power of Ottoman empire and started the gradual process of shedding away its centuries old power and glory to the newly emerging Christian powers.*
- *In 1870-71 (the peak Sunspot years) the world saw Franco -Russian War and siege of Paris. League of Germany, Russia, Austria, Hungary formed in 1872. Throughout 1870-1874, Spain remained in trouble. First Spanish Republic declared in 1873*
- The period of 1870-73, still of high Sunspots period, was also highly turbulent for the Continent of Africa, where Europeans, annexed many states, and also fought among themselves. In 1870-72 the British annexed the German colonies. In the Far East the Dutch attacked Indonesia in 1872 and destroyed the Muslim rule in the Island of Sumatra in 1873.
- The High Sunspot period 1871-1873 also corresponded with bad harvest in Europe and brought industrial unrest through out the continent.

As the Sunspot activity started subsiding by 1873, once again we begin to see a corresponding calm on earth. In 1874, there was some unrest in the Red Indians of USA which however had no major influence on world affairs.

## **17.2 Scientific Development:**

As expected, besides the political activities cycle-11 proved highly productive and creative for scientific and intellectual developments in the world. Since decline of sunspot activity was slow, the fall period of 1873-78, also brought many new developments.

In 1870, British Education Act was passed which opened way for mass literacy. This was a revolutionary development, followed by many countries afterwards. Another great development of 1872 was the Secret Ballot Act for voting introduced in Britain, which then spread to Europe and USA and thus laid the foundation for democracy the world over.

Sir Syed Ahmed Khan in India between 1869-1873, established a modern education system which later developed into the Muslim university of Aligrah, which produced many freedom fighters of Pakistan movement.

The era of the impressionist art started in France during the high Sunspot period. of the cycle-11.

Railway system started building in USA 1870. By 1880, it was 141000 km.

Development of gramophone, electric lighting and the electric bulb, were the products of research in the declining Sunspot years of cycle-11.

## SUNSPOT CYCLE-10

(Dec.1855-March 1867)

In this cycle we see that very high solar activity trend set in 1834, started reversing. Peak sunspot value of 98, reached in Feb. 1860. Rate of rise was also slow, reaching maximum in about four years. Following is the summary of the major parameters:

|                    |           |
|--------------------|-----------|
| Max. Sunspot value | 98        |
| Min. Sunspot value | 5         |
| Peak year          | Feb. 1860 |
| Min. period        | Dec. 1855 |
| Rise period        | 50 months |
| Fall period        | 85 months |
| Total              | 135months |

### 18.1 Historical Development Analysis:

The Sunspot cycle-10 began in December 1855, and its rise brought with it British attack on China in 1857 and crisis thereafter kept building up. The British threatened to take over Beijing, but Chinese agreed to British demands in 1859, when Sunspot activity was nearing its peak.

The rising period of cycle-10 also started with big troubles in India. The Indian troops revolted against British in May 1857. Rebellion soon spread to many other cities of India. However British crushed the revolt in 1858, followed by terrible blood shed, torture and hanging of thousands of Muslims leadership between 1858-60. Soon after, in the peak Sunspot year of Feb.1860, India was annexed as part of British empire under Queen Victoria.

On the other side of the globe, years of 1856-1859 were of great turbulence in USA also. In 1859 when Sunspots were near peak value, in a highly charged atmosphere South fought North America over issue of slavery, there came great change with the election of Abraham Lincoln as the president of America. On the other side, Russia captured the great Muslim warrior Imam Shamal putting end to the Muslim resistance against Czar in 1859.

1859 (the near peak Sunspot year). In Europe we see Franco -Austrian War. In northern Italy, liberation of Lumbardy from Austrians in 1859 - 1861 took place and the same year Alexander -II of Russia frees the Serbs .

In China second opium War began in 1857-58,when Sunspot activity was on rise.

The peak Sunspot years of 1860-61 also brought with them revolution in Italy, Papal

states and Naples. In 1860, Italy became republic after revolution. Sicily captured Sardinia.

American civil war was another turbulent historic event in the Sunspot peak year of 1861. In the same period, Turkish suffered set back in its European part of empire. Romania got its freedom.

In 1862-63, when the Sunspot activity was still high, the political crisis between France and USA occurred.

However, by 1863, as the Sunspot had declined sufficiently the turbulent events began to settle down world over and we see no major event after 1863. Things then began to cool down. Rebellious Southern States surrendered to USA on 14th April 1865. Civil rights Act was passed in 1866 in USA, which gave Negroes the right to vote and protection from violence.

Between 1865-66 the declining Sunspot halted for a while, which is quite unusual; and so with it began the war between Russia, Austria, Saxony, Italy and France. This weakened these states and paved way for the rise of German power in Europe.

## **18.2 Scientific And Technical Developments:**

On the scientific side, once again we see good correspondence between rise of Sunspot activity with the rise of new ideas, inventions and discoveries on earth. Following details will show this correspondence.

1858 First underground Rail project began which was completed in 1863

1859 the high Sunspot year; the first oil well was drilled in USA beginning a new era of energy in human history.

1860 the peak Sunspot. Year; Joseph Lister introduced Antiseptic treatment.

1860 Peak year; First petrol engine was invented.

1861 Sunspot peak year; Krupp invented the gun.

## SUNSPOT CYCLE-9

(July 1843-Dec.1855)

In continuation of the trend set by Cycle-8, cycle-9 was also an active period for Sun. Peak value of 131 was reached in 1848. In just 55 months. Rate of decline was also slow. Total cycle lasted for 149 months, an antisocially long period. Thus total energy under the curve is quite high. All this indicates that it would be a high crisis cycle for earth also. Following is the summary of the major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 131        |
| Min Sunspot value  | 10         |
| Peak Time          | Feb. 1848  |
| Min. Time          | July 1843  |
| Rise period        | 55 months  |
| Fall period        | 94 months  |
| Total              | 149 months |

### 19.1 Historical Development and Analysis:

Following are the major world events of this cycle:

With the rising of Sunspot and Sun flares there began violent riots in France in 1845 onward. The crisis continued sizzling between 1846-47. As a result, Republican Constitution in France was framed to give more right to people. At the peak value Sunspot, change set in 1845 culminated into French Revolution in Feb. 1848.

At the peak Sunspot period of 1848, Revolution spread to Prussia, Italy, Austria, Hungary, resulting into democratic movements throughout Europe.

Mind of Karl Marx also got agitated with the increasing Sunspots and he wrote the Communist Manifesto in 1848. giving a new powerful political thought to the world which disrupted the established systems of the world for the next 150 years.

*In the peak Sunspot year of 1848 the state of California also became the richest and the most violent place in USA due to rush from gold entrepreneurs from all over the world.*

*The rising Sunspots years also brought economic depression all over Europe. Failed harvests, and rising unemployment created large scale unrest, causing further public anger.*

In 1846 began the Mexican **War**, which flared up in 1847-48. Finally, in 1848 the peak year of Sunspot, U.S. secured Texas, New Mexico California, Utah, Nevada, Arizona, Parts of Colorado and Wyoming from Mexico in return for large



indemnity.

*The peak Sunspot years of 1847-48, also brought great Irish Famine. Drought effected many other parts of the world also. The peak Sunspot year of 1848 proved a year of revolts, revolutions and war all over Europe. In Feb. 1848, King of Naples was forced to concede a constitution, and in July 1848, monarchy was over thrown in France, and Napoleon was elected the President.*

*In March 1848, Austrian chancellor was dismissed and fled, there was revolt in Venice, Berlin and Porma, and street fighting in Milan. In July 1848, Austrians, defeated Custoza, In Sept. 1848 Croats invaded Hungary. In Nov 1848 Pope IV flees from Rome to Kingdom of Naples and returns to Rome in April 1850 with French military help.*

*After 1850, things began to settle down gradually on earth as sun was also becoming calmer in the heaven. However, there was out break of war in Crimea between Russia and Turkey in October 1853. There was also a Muslim revolt in Yunan in China in 1855. These explosive events seem to have occured due to a brief halt in the decline of Sunspots between in 1851-53, Moreover, Sunspot activity between period 1851-1853 was still quite high, which can explain the persistence of violence on earth in these years. Calm period on earth began after 1853, when solar activity had substantially cooled down.*

## **19.2    Scientific Development:**

On the whole, we see that the high rising period of Sunspot cycle-9 also proved a period of great scientific developments on earth. Inventions of propeller Aeroengine (1851) and Steel Smelter (1858) were the outcome of this cycle which set the era of industrial revolution in the world.

## SUNSPOT CYCLE-8

(Nov. 1833-July 1843)

Sunspot cycle-8 of 1833-1843 was much more active period for sun than the earlier three cycles. It lasted only 116 months, achieved maximum value in 40 months, and declined in 76 months. There was sharp rise between 1834 to 1837, reaching to high peak value of 147 Sunspots per year in 1837. The period between 1835-1840 was thus highly active. It began to slowdown after 1840 reaching minimum value in 1843.

Following is the summary of major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 147        |
| Min. Sunspot value | 7          |
| Peak year          | March 1837 |
| Rise period        | 40 months  |
| Fall period        | 76 months  |
| Total              | 116 months |

As per our hypothesis abnormally higher Sunspot activity of 1835-1840 proved of great significance on earth also, which is verifiable in the following.

### 20.1 Historical Development and Analysis:

Historical records show that sudden sharp rise of Sunspots in 1834 brought with it revolutionary developments on earth, including beginning of great European successes in colonizing the world.

*In 1836 Britain took over South Africa for the next two hundred years, in USA, Texas got independence from Mexico after a bloody battle. 1835 also brought with it serious conflict and battle between Turkish empire and Britain, in which Turks suffered terrible losses. Consequently, Syria and Egypt were lost to Britain in 1835 and 1836, when Sunspots were jumping high to peak in 1837. Queen Victoria was crowned in Britain in 1837. British -Afghan War began in 1838, British suffered set back and 16000 British troop evacuated in 1842, from Kabul.*

*The near peak value Sunspot year of 1839, brought with it the first China war with Britain which proved the fore-runner of the famous opium war.*

*It was not calm for the Newzealanders also. The British took over Newzealand. Same was the case of Hong Kong, which they occupied in the turbulent Sun of 1839-1840, the near peak years.*

British defeated Xhosa in South Africa in 1834-35, and great Boer Trek from Cape colony began in 1835-37, the fast rising years of sunspots.

*After instability and resentment of people in 1837-1840 (the peak sunspot year), Napoleon Bonapart led uprising in France against Monarchy in July 1840*

In America, Texas got independence in 1836 and Michigan in 1837, in an atmosphere of political instability and civil war.

## **20.2 Scientific And Technical Development:**

On the scientific front, period between 1837-1842 the high Sunspot years, proved highly productive. Explorers reached extreme North and discovered Continent of Antarctica in 1840.

In 1835, the rising Sunspot year, Colt patented Revolver, thus opening a new dimension in weapons, and in 1836, a Steam Ship with propeller sailed, setting a great revolution in long distance sea travel which changed the future of world in trade and military.

In 1837, electrical telegraph was patented in USA.

Diesel engine was invented in 1840 which opened way for machine transport.

In the medical world Ether was used as anesthesia in 1842, thus initiating a revolution in surgery.

## SUNSPOT CYCLE -7

(May 1823-Nov.1834)

Sunspot cycle of 1823-1834 compared with the earlier two cycles was slightly more active. Peak value reached 80 in Nov. 1829 and stayed about this value upto 1831, then gradually fell to minimum value of 7 in Nov. 1834. The ascent period was quite long, about 78 months where as the descent period was unusually fast. Following is the summery of the major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 72         |
| Peak year          | Nov. 1829  |
| Min. Sunspot value | 01         |
| Min. year          | May 1823   |
| Rise period        | 78 months  |
| Fall period        | 48 months  |
| Total              | 126 months |

These features predict that relatively it will be again a less eventful period on earth but more active then the cycle-6, and cycle-5. The period between 1827 to 1833 is likely to produce more aggressive and productive events, because of rising Sunspot activity and than its staying at peak from 1829 for several years to come.

### **21.1 Historical Development and Analysis:**

Very low Sunspot activity in years 1823-1824 proved of low activity on earth also. However, by 1825 when Sunspot activity had reached 40, we see some major changes begin to appear on earth. In the Southern hemisphere, Brazil and Bolivia won independence from Portugal in the uprising of 1825-1826.

As the Sunspots further increased, independence movements strengthened and thus 12 new nation- states emerged in the world between 1825-1827.

In Turkey, in 1827, the trained and thought to be loyal troops to the government revolted against the system. In 1827, when Sunspot was quite high, alliance of Russia, and Greek came into being against Ottoman and Russo-Ottoman war was fought in 1828-1829, the peak Sunspot period. In the peak sunspot years of 1828-1829 Turkey also lost Serbia, Albania and Greece.

In 1830, in the peak era, the French captured Algeria. In July 1830 at Sunspot 72 peak, the French revolution took place. In 1830 Belgium revolted against Holland and won its independence. In 1831, when Sunspot activity was still near peak Finland won independence from Russia. Also Croatia, Hungary and Slovakia got their independence from Austria.

In the high rising Sunspot year of 1827, Britain, France and USA allied together and destroyed Turkish Fleet.

1828 brought Turko - Russian War and in 1830, uprising in Germany, Holland and Belgium, was crushed.

The low Sunspot period of 1823-25, and then 1832-1835 did not have any major political event in stock and nor any great scientific discovery or invention.

## **21.2 Scientific Activities:**

The high Sunspot activity period of 1826-1831, was also productive scientifically.

In 1826, Photographic camera was invented whose impact is clear.

In 1828, first railroad built for the transportation of passengers and freight in U.S. A.

In 1828 - Lewis Braille invented a reading system for the blind.

In 1831 - Faraday invented first dynamo to produce electricity, which has changed the world since then.

In 1831 - Morris invented Telegraph, which became the starting point of communication revolution.

## SUNSPOT CYCLE-6

(August 1810- May 1823)

The Sunspot cycle period of 1811-1823 is once again of relative low activity period. In general the trend set in 1798 -1810 continued in this period also. The peak value of 48 was achieved in May 1816 after 69 months. The fall rate was also fairly slow reaching to minimum value in 84 months in 1823. Following is the summary of the major parameters:

|                |             |
|----------------|-------------|
| Max. Sunspots  | 48          |
| Min. Sunspot   | 0           |
| Peak period    | May 1816    |
| Min. period    | August 1810 |
| Rise period    | 69 months   |
| Decline period | 84 months   |
| Total          | 153 months  |

### 22.1 Historical Development and Analysis:

To predict from the above trend of Sunspot we can say that period between 1810-1823, should be relatively calm for earth. However persistence of declining Sunspot for a long period will mean a general turmoilful atmosphere throughout. Major historical events of significant value in this period should be of mixed nature i.e. war and peace going together. This will be evident from a large number of peace treaties signed in this era.

From the calm conditions prevailing from 1806-1810, suddenly one sees some movement in the world in 1811, with the beginning of cycle-6 when the sun started becoming active once again. In this year, there was a massacre in Egypt by the hands of its ruler Muhammad Ali.

As the sun was becoming more turbulent in 1812, Napoleon-1 moved with his 610,000 men to attack Moscow. Russian retreated leaving the French at the mercy of its severe winter. In this battle about 50,000 Russian were killed. After this victory Napoleon moved forward to Moscow, which was already abandoned and deserted, so found nothing there. This strategy worked and world's largest army was wiped out, 600,000 French soldiers perished by the chilling cold and hunger in Russia. Disappointed, Napoleon returned to Paris, to face the coalition of Britain-Russia, Austria. Myth of invincibility of Napoleon was broken for ever. He was forced to abdicate in April 1814, when sun had reached its near peak Sunspot activity. Peace treaty was forced on the French in May 1814 in Paris.

Across the Atlantic, the rising near peak Sunspot period of 1812-1814 was also volatile. As Napoleon was getting his worse in Russia, USA also declared war on

Britain. The war continued upto 1814. In December 1814 peace treaty was signed, with USA winning its independence from Britain. However, Canada remained with UK.

When the Sunspot activity was still at peak, Napoleon returned in March 1815, collected his army, and to avenge invaded the combined army of Britain, Dutch and the Russians but his fate was sealed at Waterloo, the battle fought in the peak Sunspot year of 1815. He was imprisoned and sent to an isolated remote Island of St. Helena to die in exile in 1821.

In 1815, tired of frequent fights and in wars, when Sunspots were still at peak the European rulers signed treaty of peaceful coexistence and promised to rule on so called Christian Principles. However, as it was all based upon hypocrisy, the alliance broke down in 1818 and the unrest started again.

The declining Sunspot activity, though low, had persisted for a much longer time. Consequently, the period between 1817-1820 proved a period of political disturbance all over Europe, but due to low Sunspots no revolutionary development took place. In 1821, the Greeks revolted against Ottoman with the help of their co-religionists Russia, Britain and Austria. It was start of a series of skirmishes between Turkey and Greek which lasted upto 1830.

In the East, 1821 was also a year of turmoil in China, when Muslims revolted against the emperor, but revolt was crushed in low Sunspot year of 1822.

## **22.2 Scientific Developments**

- 1812 Phillips Girard invented machine for spinning flax.
- 1814 George Stephen made first practical Steam Locomotive.
- 1815 Humphry Davy invented Miners Safety Lamp.

## SUNSPOT CYCLE-5

(May 1798-August 1810)

In contrast to cycle-4, the Sunspot cycle-5 proved very calm, Activity of Sunspot remained relatively very low. Compared with the maximum value of 141 of cycle 4, the peak value was just 50, and it took 81 months to rise to this value, i.e. very slow. However cycle-5 persisted for nearly 147 months which is a year more than the normal value of 11 years. Rate of fall was also quite slow. Following is the summary of major parameters:

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 50         |
| Min. Sunspot value | 3.0        |
| Peak period        | Feb. 1805  |
| Min period         | May 1798   |
| Rise period        | 81 months  |
| Fall period        | 66 months  |
| Total              | 147 months |

From these features we may say that Sunspot cycle-5 (1798-1810) should be relatively a clam period for the earth. But persistence of a much longer fall period much longer is an indication of tense atmosphere in these years. Let us now analyze it with the actual situation on ground.

### **23.1 Historical Development and Analysis:-**

Following is a summary of the major world happening of this period. No revolutionary development is noted on earth for this low Sunspot activity period.

Hostilities between France and Britain due to momentum gained in cycle 3 and 4, continued at home and abroad in colonies.

Britain also won a decisive battle against Sultan Tipu of Mysore in India. He was killed in 1798. It was a major setback to resistance forces against the British and thereafter made capture of India relatively an easy game for the British.

Napoleon started the conquest of Egypt in the rise period of cycle-5. However in the battle of Nile, Admiral Nelson of Britain destroyed French fleet. Napoleon opened new front against Turks and occupied Egypt in August 1798.

In 1799 Napoleon entered France and took over as the first Chancellor of France. He recaptured Italy in 1800 and signed Treaty of Lunville. In 1801, the rise period of Sunspots. Napoleon defeated the combined forces of Austria and Russia. In 1804, the peak year of Sunspot activity,. Napoleon destroyed might of Prussia and



Spain. After these grand victories he became emperor of France

In the Middle East, peaking of Sunspot brought the rise of Wahabi Movement in Arabia. They attacked Makka, Medina and took them over in 1804.

By 1806, the Sunspot activity had declined to a very low value. Consequently the period of 1806-1810 also proved quite calm on earth.

### **23.2 Scientific Achievements:**

1800 Richora Treithich Constructed low Pressure Steam Engine.

1800 Volta produced first electricity from a cell, the first form of battery.

1802 First practical steam ship built in London.

1803 First steam boat invented in USA.

1807 Street lighting began in London.

### **23.3 Analysis of Events:**

As we analyze the above events we see that many events of cycle-5 were actually the after math of the great upheavals of the high Sunspot cycle-4. Thus we don't see any major revolutionary developments of far reaching effects for cycle-5. Generally events are continuation of the French revolution. Rise of Napoleon as Emperor of France in 1804, coincided with the peaking of the Sunspot activity. However, considering the low peak of activity of 50 only, one could predict that Napoleon phenomena would be of temporary nature only and disappear after some time. Future history is witness to that.

In the Eastern world, rise and capture of Makka and Madina by Wahabis in Arabia in 1803-4 (the peak Sunspot year) was a major event which had far reaching effect on the future history of Arabia. The present Saudi Kingdom drives its roots from that movement.

Defeat of France at the hands of coalition of Russia and Austria in 1805 and the Russo-attoman war in 1806 (which continued till 1812) also coincided with the peak Sunspot activity of this cycle, and persisted for a long time due to persistence of declining Sunspots.

Events beyond 1806 to 1810, which was a period of declining low Sunspot activity, are generally of peaceful nature and of temporary value. In this period a number of peace treaties were signed in Europe and USA. Events in the rest of the world were also of no major significance, thus once again proving our hypothesis i.e. "Calm in the sun-Calm on earth".

On the scientific front, major discovery which latter changed mankind's entire outlook of science of materials was Dalton's Atomic Theory put forward in 1803, which coincided with the peak Sunspot activity that year. Invention discussed above particularly volta's electric battery cell were also of very important consequences for future of mankind.

## SUNSPOT CYCLE-4

(Sep. 1784 - May 1798)

The Sunspot cycle of 1784-1798, in continuation of the previous cycle was of high activity in the Sun. Rise was quite sharp. **In** just 41 months it reached peak value of 141 average Sunspots per year. The fall period from maximum to minimum also persisted longer from 1790 to 1797, i.e. 7 years against the normal 6 to 6 1/2 year. Following is the summary of the major parameters.

|                    |            |
|--------------------|------------|
| Max. Sunspot value | 141        |
| Min. Sunspot value | 10         |
| Peak period        | Feb. 1788  |
| Min period         | Sep.1784   |
| Rise period        | 41 months  |
| Fall period        | 123 months |
| Total              | 164 months |

This indicates that period of 1784-1798 being of excessive solar activity, correspondingly should be excessively hot period on earth also. Let us analyse it from the following survey of the world history of this time.

### **24.1 Historical Development and Analysis:**

French Revolution is the most significant event of this period which had great impact on the future history of Europe. Dissatisfaction against the imperialism started boiling in 1785 when Sunspot began to rise sharply. Reformists started organizing riots and strikes against the French emperor which gradually picked up. The rising turbulence in the Sun, further agitated minds on earth. The final stage was ripe for revolution in Feb.1788, the peak year of Sunspots, when whole of the France was caught by riots, strikes, street fights and government offices were put on fire

Between 1787-1789 French the peak turbulent years of sun, there were direct clashes between the Army and the people. 1789 was also the year of very high Sunspots which caused even more political riots and agitation all over France. In July 1789, people attacked the army barracks in France. There was complete chaos in the country and revolution spread rapidly from town to town. Ultimately, monarchy was abolished in June 1791, and French republic was declared in Sep. 1792, when the Sunspot activity had started declining but was still high. Condition in the rest of Europe also remained highly tense through out this period.

The year 1788, the peak Sunspot year, also brought with it a severe winter which paralyzed whole of Europe. Extreme cold climate ruined harvests in fields and most Europeans suffered with famine-like conditions everywhere.

After 1793 it was relatively quite in the sun and so we see it quite on earth also. History does not record any major and political upheaval for this period.

## **24.2 Scientific and Intellectual Developments:**

Regarding scientific achievements, the most important of them was the discovery of Uranium in 1789, the very peak year of Sunspot activity. Same year has the distinction of the invention of electrical battery cell, again a revolutionary step for the civilization. Other great technical achievements were:-.

1784- English Iron master, Henry Colt, developed the rolling processes for manufacture of wrought Iron.

1784 - Andrew Meikle, a Scottish Mill-Wright invented the threshing machine.

1784 - Edmund Cortwright invented the power loom.

1785- James Wall and Matlow Boulton installed steam engine with rotary motor in a cotton spinning mill in Nottinghamshire -England.

1786- Internal gas lighting tried in Germany and England.

1784- First steam Powered Rolling mill built in England.

1783- Eli-Whitney introduced the cotton gin.

1795- Joseph Bramah invented his hydraulic press.

1796- Vaccination against Smallpox was introduced.

## Chapter-25

### SUNSPOT CYCLE-3

(Jun. 1775 to Sep. 1784)

Compared with Sunspots cycles of 1766-1775, and 1755-1766, Cycle-3 was a period of intense solar activity Following is a summary of the major Sunspot parameters of cycle-3:

|                       |            |        |
|-----------------------|------------|--------|
| Max. Sunspot value    | 158        |        |
| Minimum Sunspot value | 7.2        |        |
| Peak period           | May        | 1778   |
| Min period            | June       | 1775   |
| Rise period           | 35         | months |
| Fall period           | 76         | months |
| Total                 | 111 months |        |

Unusually large peak value, short rise to maximum value and ten year cycle period proved politically explosive and also highly productive for science and technology on earth. Events of this period are seen to have lasting impact on the world future history.

#### 25.1 Historical Development and Analysis:

On the ground, the most significant event was Declaration of Independence by the Americans in Jan. 1776, accompanied by a sudden rise in the solar activity.

The following years, 1777-78, were of unprecedented sharp rise in Sunspot activity. In less than two years it shot up from 20 to 125 and in the next few months reached to the peak value of 158. At this very juncture (1776) Britain annexed Canada also and fighting continued between American states and British forces all over the continent and U.S.A. achieved independence on 4th July 1776.

China also suffered political agitation and revolts in these days of abnormally high solar activity. Muslim Population of China rebelled against the Chinese Emperor in 1777, and trouble thus initiated lasted for ten years.

In Feb-78 when solar activity was near its peak value the French entered into alliance with USA, raided on White heaven England. In July 1778, the French fleet arrived America. The Americans captured Rhode Island in August 1778.

In June 1779, the near peak Sunspot activity, year, Spain declared War on Britain, America gained victories in North Sea. On an overall survey, 1776-1780, the high Sunspot activity period generally proved of turmoil years between European powers, with War at home and abroad in the colonies.

Peace began to prevail only after Sunspot activity had sufficiently declined. In 1782, the British govt. was defeated in parliamentary vote on War and forced to resign.

Peace talks began in April 1782 in Paris, and Nov 1782, preliminary peace treaty was signed which was ratified in Sep 1783 and signed by Britain, France Spain and United State.

## **25.2 Scientific Developments**

As for the Scientific achievements, this period also proved of great significance for the world for the industrial revolution in the world. Following developments proved of fundamental importance for later scientific and industrial progress.

- Priestley separated oxygen from air in 1778.
- Cotton Spinning machine was invented in 1778.
- Building of first iron bridge in England started in 1777 and finished 1779.
- In the fall period of 1783 the world saw the first balloon flight. In the same period first steam boat was seen on the sea.

## SUNSPOT CYCLE-2

(Jun 1766 - Jan 1775)

Major Sun parameters for cycle-22 are: -

|                     |                   |
|---------------------|-------------------|
| <i>Max Sunspots</i> | <i>115</i>        |
| <i>Min sunspots</i> | <i>11</i>         |
| <i>Peak period</i>  | <i>Sep 1769</i>   |
| <i>Min Period</i>   | <i>Jun. 1766</i>  |
| <i>Rise period</i>  | <i>39 months</i>  |
| <i>Fall period</i>  | <i>69 months</i>  |
| <i>Total period</i> | <i>108 months</i> |

Above parameters indicate that the sun was quite explosive between 1766 and 1775, particularly period between 1768 - 1772 was very active for the sun. Hence events on Earth should be proportionately active in this cycle. Let us verify it from the available historical data.

### **26.1 Historical Development and Analysis:**

While Sunspot activity was rising high:

In 1768-69, James Cook discovered Hawaii, New Caledonia and other Pacific Island.

In 1770, Peak Sunspot year, Cook also claimed East Coast of Australia for Britain and called it New South Wales.

1770 - Europeans started colonizing African continent crushing local resistant ferociously.

The high rise years of 1768-1773 caused wide spread protests in USA against British occupation. Agitation continued growing and in 1773 protests by workers at Boston harbor against British excesses sparked the flame all over the country. As a result in April 1775 first Skirmishes of War between American and British soldiers started at various places. In June 1775, British victory at Battle of Bunkers Hill, North America, further charged the atmosphere against them.

July 1775 - George Washington assumed Control of Continental Army, freed Montreal from the British, and fighting kept on intensifying with the rising Sunspot activity all over America, resulting finally into declaration of independence in 1776.

The high rising Sunspot period of 1766-1770 was terrible turmoil for India, Mughal Power crumbled this invading forces, British strengthened their strong hold in Bengal, and thus laid the foundation of the British Empire in India.

## **26.2 Scientific Developments:**

The high Sunspot activity of cycle-2 brought an upsurge in scientific and industrial developments, and thus accelerated the process of industrial revolution in Europe. Following achievements proved of great importance for the future.

1768 -First weekly installment of the Encyclopedia Britannia appeared.

1769 - James Watt patented steam engine.

1769- Richard Arkwright invented spinning frame powered by Water.

1770 - James Hargreave patents spinning Jenny.

1775 - Pierre - Simon Girard invented water turbine.

The above developments show that the high Sunspot activity of sunspot cycle-2 became a source of great intellectual activity, particularly years 1768-1772, when Sunspot were at high value.

## SUNSPOT CYCLE – 1

(May 1755 - Jun 1766)

|                    |            |
|--------------------|------------|
| Max value          | 86         |
| Min value          | 8.0        |
| Peak period        | Jun 1761   |
| Min. period        | May 1755   |
| Rise period        | 75 months  |
| Fall period        | 60 months  |
| Total Cycle period | 135 months |

Sunspot cycle-I is the starting point for regular scientific observation of sunspots in the world. Prior to it, Sunspot activity had been quite low and consequently it went unnoticed. In parallel to it the earthly happenings had also remained slow and passive. A great change came after year 1700, when sun started getting active. Peak activity of cycle-1 in 1761, of the order of 86, shook the world, and we see political, military, scientific and intellectual activities on the rise. Let us verify it with reference to the historical events of that period.

### **27.1 Historical Development and Analysis:**

With the gradual rise of Sunspot activity from 1700, European countries had started looking out to conquer the world. Establishing great trade routes and through trade, they began to establish political hegemony over Asia, Africa, America and Australia. The colonial activity picked up as Sunspot activity picked up in heaven. By 1755, Britain had established itself as the most aggressive colonial power in India, USA and African continent. The rising Sunspot in 1757, brought defeat of Bangali Muslim Rulers at the hands of the British general Robert Clive, thus laying the foundation of British Raj in India.

### **27.2 Scientific Developments:**

Generally this period triggered scientific activities in European universities, and the process of industrial revolutions was set in motion in the high rising Sunspot era. Following developments were of significance for the future industrial revolution.

1756 - First Chocolate factory in Germany.

1756 - Cotton Velvet first made in Bolton.

1762 - Cast Iron converted into malleable Iron in Scotland.



## CASE HISTORY OF WORLD WAR-I AND WORLD WAR-II

*World War I and II have been the world shattering happenings of the 20th century. Each of these consisted of dozens of major and minor events, troubles, skirmishes and wars between nations. Where and what went wrong that the world got madly charged with emotions and its leaders thought "shedding blood" the only remedy for their problems? The Allies blamed the Germans and the Germans blamed the Allies, but why nation after nation, kept jumping in the fire of War? Did they do so under pressure of Allies or Germans, or there were nonhuman factors which drove them to the madness of War?*

*In the following paragraph we shall study the various events of war and the behavior of participating nations and thus look for correspondence with the turbulence in the sun to explore for the cosmic causes behind those gruesome events.*

## Sun And The World War-1

In the heaven, it was all calm, when there occurred a sudden upsurge of Sunspot activity in August 1913. Sunspots started rising up. By August 1914, just in one year, it jumped to 40 points, indeed an explosive rise. In the next one year it reached 60, and by August 1917 peaked to 105 Sunspots. The explosive rise in Sunspot activity catalyzed the brewing events on earth, which resulted into the beginning of World War-1. In August 1914, when the earth was oriented to receive maximum magnetic field from the Sun, minds began to boil with aggression. By September German army had reached Paris, defeating the combined French and British forces, and entrenched themselves from the Belgium coast to the Alps. Turkey joined side of Germany in November 1914.

The war reached new dimensions in the high magnetic month of March 1915, when the Allies planned to free Dardanelles and Bosphours from Turkish control. At this juncture, Russia joined the war putting pressure from the East. Italy joined with Allies on May 1915, but the pressure of Germany continued against Allies. War near River Somme in France resulted in over one million deaths in the month of August-September and November 1916, when sunspots were not only peaking to maximum but the earth was also oriented to receive maximum magnetic activity. Thus, acceleration in war was but natural.

Russia also joined Allies in August 1916. In Feb. 1917, the German started all out submarine warfare against all merchant vessels in the war zones of eastern Atlantic. USA joined with allies in unrestricted war fare in April 1917 duly declaring war on Germany. The Sunspot activity was near peaking by then.

Things became extremely awkward for Allies in these months due to shortage of supplies. There were famine like conditions the world over as this was the period of magnetic reversal in the sun, which is associated with the corresponding simultaneous flood and drought conditions on the earth.

*In March 1917, food riots and strikes broke out in Russia and immense war weariness settled on the people. Tsar Nicholas-II abdicated in Feb. 1917 large scale strikes, famine and riots occurred in Russia, Finally, revolution succeeded in Oct. 1917 putting Communists in control.*

*In this very period, Sunspot activity was also at its peak value of 105, and solar flares and magnetic radiations reaching earth were on peak and magnetic polarity in the sun was reversing as per 22 - years solar magnetic cycle.*

*At this time Russia also plunged in chaos from which it took years to emerge. In March 1918, Russia concluded with Germany treaty of peace. By then Russia had surrendered Georgia, Ukraine, Finland, Poland, Baltic provinces. In the battle of Oostende in July-Nov. 1917, the British suffered some 3000,000 casualties.*

*In the Eastern Front, the Allies had some successes defeating Turkey and capturing Baghdad in March 1917. Things nevertheless went badly against the British and the French in March 1918 and thereafter by a series of great German offenses began. Sunspots were even then high and earth in orientation to receive maximum magnetic field. The First attack was at Somme in which half a million people died.*

*However, the tide turned in favour of Allies with the help of American army. Germany, whose war machinery had also got tired by then, was defeated in Autumn 1918. Slovak forces knocked out Bulgaria in September 1918. Turkey collapsed in October 1918. Austria followed in November 1918. Finally, Germany surrendered on 11 November 1918, in the declining period of Sunspot activity.*

First World War lasted for four years and three months involving 30 sovereign states, some eight million soldiers were killed and an equal member died by disease and starvation. (Ref. Denis Richards Book-An illustrated History of Modern Europe 1789-1989, 7th Edition).

### **Analysis of Cosmic Effects:**

We have already described Sunspot effects on the World War-I. In the following paragraphs some further details are being discussed. In this scenario, we see a surprising agreement with our thesis that the months of Spring (February-March-April) and Autumn (August-September-October) are catalytic months for emotional and agitational happenings and with reversal of magnetic field this effect is further intensified. Events in the rest of the year may be their effects only.

It is note worthy that in the World War-1, more than 80% of the most ferocious events occurred in the month of Spring and Autumn. In the three and half year of war, out of the 22 major happenings, twelve took place in the three months of Feb-March-April, the remainder eight in August-September and October. Only a few major events took place in the months of November and one in the month of May, even these two months i.e. Nov. & May are extension to the Autumn and Spring.

This chain of events supports our hypothesis that Spring and Autumn are indeed very aggressive months and have special impact on human thinking, emotions and decisions, which, is due to the catalytic effect of the increased solar magnetic activity reaching earth and thus affecting the human mind and emotions.

As for the eleven year cyclic variation of Sunspots, 1912-1913 was the period of minimum Sunspot activity. In the previous cycle the peak Sunspot activity had occurred in 1905 but peak number of Sunspots was just about 63 which means it was quite calm period in the sun. That was therefore, a dull period on earth also. Sunspot activity fall rate time was also quite slow. Thus the period between 1900 to 1913 was of relative peace on earth. But beginning 1914, there was sudden rise of unusual activity in the sun. A sudden steep rise in the Sunspot from about eight to fifty was noted in just about twelve months. Due to it, there were excessive Sunflares and thus a large release of solar winds, X-rays and magnetism took place in the year 1914 which became the cosmic cause of heightened tension on earth. It is also to be noted that ratio of the max. sunspot events of cycle-15 and previous sunspot cycle-14 is 1.65, which itself is an indicator of some revolutionary changes in stock for cycle-15. Consequently, minds were agitated, emotions rose, politicians, army chiefs and bureaucrats all over the world, saw aggression, bloodshed and war as the only way to solve their problems and so the world moved towards the road to aggression of unparalleled magnitude.

Between 1915-1916 rate of rise of Sunspot activity had somewhat slowed down and, in parallel, there was some slowing down of war scene also. However, again, there occurred a

bursting sun spots period beginning 1916 when they jumped from 53 to the peak value of 104 Sunspots in the next one year. In parallel, we see sudden heat in war with the opening of various new fronts. Peak Sunspot activity was reached in May 1917. This corresponded with the period of great turmoil in Russia and major events of war and explosive happenings in the form of revolution, famine and disease in many countries on earth.

With the beginning of 1918, there is seen a rapid fall in the solar activity which declines to 60 points by December, 1918, and is mere 50 at the beginning of 1919. This corresponds well with the declining activity of war on earth, and things began to settle down quickly. In the absence of the agitating influence of sun we notice various initiatives and treaties of peace being signed in these years.

## Sun and the World War-II

Second World War-II is considered to be the most gruesome event in the entire known history of mankind. But when did it start?. It is difficult to single out any one event as its starting point. Infact, it was outcome of great many tension building events between 1934-1938 among the European countries, the period when Sunspot activity was fast rising in the heaven. The period is associated with occasional outbursts of solar flares. For example, in 1938, there was an abnormal explosive solar flare with an estimated speed of 450 miles/sec. This released tremendous amount of magnetism, charged particles and solar radiation to earth. Thus we see the cold war turned hot. By September 1939, Germany had broken up Czechoslovakia including occupation of Bohemia. Austria was annexed to Germany on 13th March 1938. By then Sunspot activity had also peaked to about 150.

Before that, in the rising Sunspot period 1936 to 1939 a serious crisis had hung over Europe in the form of the Spanish civil war. The anarchists adopted wrecking-tactics, strikes, riots and burning churches was the order of the day. February 1936 brought to power a combination of leftists parties known as Popular Front in Spain. By the end of 1936 they controlled three fifth of the country.

The peak Sunspot and solar flare activity rose explosively in March 1938, and with it the war front spread in various areas of Europe. Madrid fell in March 1939 to the nationalists, This was the period when- Sunspot activity was rising fast. By 1936 it was already more than 65, from 6 in 1934. On 21st August 1939, Russia and Germany signed non-aggression pact and in March 1940, Russia captured Finland. Germany invaded Denmark and Norway. In April 1940 and through April-May 1940 Germany had invaded Holland, Belgium and France and taken over these countries without much resistance. Dunkirk was evacuated by allies on 26th May 1940. After Dunkirk, the Germans turned against the French armies to the south, sweeping across Somme and Cine, they occupied Paris.

Battle of Britain was fought in August-September 1940. In October 1940 Hitler occupied Romania. The Italians suffered heavy setback in their attack on Greece in October 1940. These activities coincided well with the high Sunspot average of about 100, and solar flares of March-August 1940, when Sunspot occasionally rushed high, sending explosive signals to earth. In the wake of high solar activity, Britain occupied Syria in June-July 1941. German invaded Russia in June 1941. By then Sunspot activity had started declining from peak of 170 in March 1938, but it was still Very high.

In the East, the Japanese captured Hong-Kong, Malaya, Burma and the Pacific Islands between December 1941 and May 1942.

On the Allies side, America was victorious against Japan in the battle of New Guinea in May 1942, and the onslaught of Japan on Midway Island was also broken.

In Africa, Rommel attacked and carried the Italian German armies to within sixty miles of Alexandria in May 1942.

In Russia, the Germans attacked Stalingrad in September 1942 and every building

was turned into ruins. This also coincided well with the temporary solar flares storms of 1941-1942. But thereafter the war theater continued on its own momentum.

In Oct. 1942, when except occasional out bursts, on the average Sunspot activity was settling low, the war front also began to gradually come to its conclusion. The British army under, Montgomery struck at Rommel's forces before El'Alamein and defeated them. By May 1943, the last of Axis forces in Africa of about 250,000 men were rounded up. In the west, the tide also turned against the Germans in spring 1943. Solar activity by then had declined to less than 30, and so peace process was setting in the Sun also. On 3rd September 1943, Anglo-American forces swept across Sicily to the mainland. On the D-Day, 6th June 1944, the Anglo-American forces touched down on the beaches of Normandy. In August 1944, The Allied freed northern France, swept Belgium and Holland. By September 1944, Allies army had crossed the German frontier in several places. This was also the period of the lowest Sunspot activity being just about 6 in early 1944.

But by March 1944 new Sunspot cycle had begun and Sunspot activity started rising fast once again. In this rising scenario, Allied forces over ran the German launching sites of V1 and V2 rockets. In the spring of 1945 Russia also completed its conquest of Hungary, and liberated Lithuania.

In March 1945, when there was sudden rise in solar flares and Sunspot activity, U.S. General Eisenhower's forces launched their new offensive and swiftly crossed the Rhine. On 25th April American and Russian forces, approaching from opposite directions met on the Elbe. Three days later, Mussolini was shot dead by the Italian forces. On 30th April, 1945 Hitler committed suicide. On 8th May German resistance came to an end.

At the pacific front, on 6th August 1945, the Americans dropped Uranium bomb on the port of Hiroshima devastating four square miles and killing or injuring 160,000 Japanese men, women and children within seconds. Three days later, on 9th August, they tested their plutonium bomb on Nagasaki, the large industrial city of Japan, killing hundreds of thousands suddenly.

It is to be noted that dropping of Bombs happened in August, when the earth was oriented to receive maximum magnetic field, and moreover, there were large scale solar turbulences in the month of July-August, and with fast rate of rise of Sunspot activity after passing the minimum in 1944. Consequent upon the atomic Bomb drop, on 14th August 1945, the Japanese accepted the Allied terms for unconditional surrender.

### **Analysis:**

Above is a brief chronological account of major events of World War-II. Let us now analyze these happenings with respect to Sunspot data of the same period.

1. It is seen that out of 35 major happenings 12 occurred in spring (Feb-March-April), 14 occurred in Autumn (August-September-October) and 10 in May-Jan-July and one in December. This means that 80% of the major events occurred in Spring and

Autumn. If we also include the month of May which is next to Spring season then events in the Spring jump to 17, almost fifty percent of the total. This is in line with our hypothesis of excessive emotional disturbances in the Spring and Autumn months.

2. As discussed earlier, the rate of rise and fall of Sunspot activity is also of great significance with respect to their Sunspot influence on the world affair. In the case of Sunspot cycle beginning August 1923, it had taken 4.8 years (quite slow) to reach the peak of 80 Sunspots in April 1928, whereas in the cycle beginning March 1934, it took only 3 1/2 years to attain the average peak of 120 Sunspots in August 1937, though occasional outbursts of sunspot exceeded 170 some times. The peak sunspot activity also persisted and stayed near this value up to 1939. Moreover, the ratio of average between max. to max. between cycle-17 and 16 was over 1.5, again indicating a big change in events. Thus, fast rise of sunspot activity and its staying high for a long time, clearly indicated that something abnormal was in store for the world. And this we saw in the wake of events in 1934 setting the stage for World War-11.
3. As for the rate of fall, it began slowly in 1940 at average fall rate of about 20 Sunspots per year in the war years. This slow decline meant persistence of the high Sunspot activity for a longer time. As per our hypothesis, if the rate of decline of Sunspot activity is slow the explosive events will also persist longer. Thus, the war front continued for a longer time.
4. The near peak Sunspot activity lasted from August 1936 to August 1940 which means release of large amount of Sunspot energy for many years, and thus it was very much abnormal for Sunspots as compared with the previous Sunspot cycles. This clearly meant some drastic effects on earth due to continuous release of large amount of solar activity in these years.
5. It is also noted that sunspot cycle-17 was quite turbulent in the sense that occasional sunspot activity jumped as high as 170, releasing large solar charged particles and magnetic field to earth, thus becoming the cause of great turbulence on earth
6. As regards the fact that war lasted up to August 1945, but Sunspot had begun to decline after 1940, this is partly due to the momentum of war, but as said earlier, more so due to the persisting high Sunspots and solar flares, and also the slow rate of fall of Sunspot activity. Events after 1944 are due to the initiation of the next Sunspot cycle, and the associated high rate of rise of solar activity of cycle-18.
7. On the ground, the worst events of the war were the Atomic Bombs dropped in Japan on 6th and 9th August 1945. This could be attributed to the sudden upshot in the sun in the July-August period and high magnetic field then, after the minimum had already passed in 1944. This is evident from the monthly records of the Sunspot data. There was sudden upward shoot of Sunspot in the beginning of August jumping from 40 to 70 in less than a week's time, indicating something drastic for earth. Since it happened in the month of August, therefore due to direct orientation of earth to sun in this month, its effects were much more pronounced. If such a prominence had occurred in any other month of the year, possibly this horrible event may not have occurred on earth.

## Appendix-II

### **CASE HISTORY OF PAKISTAN PAST AND FUTURE**

#### **1. Introduction:**

Life on the earth is not only dependent on sun but is regulated by it. Our very survival depends on its heat and light. Change of weather on earth and growth of plant life is due to it. However, the sun in many other ways also affects us on earth. It is a highly dynamic system. Violent trubulences and storms are going on all the time in its gaseous body. Sometimes flares of solar winds reach out millions of miles in within hours.

Solar winds are always associated with magnetic storms and rise of charged particles in the upper atmosphere of earth. There storms, since Galiloeo's time, are known to rise and fall in a regular pattern within a period of about eleven years. Their effect on the changing heights of the Ionosphere has been recently studied and found that it is highly sensitive to the changes in the sun. Also, magnetic storms due to the sun are found to disrupt communication and sensitive electronic system on earth and in space.

We humans are also basically complex electrical machines. Our thought process and behaviour is the outcome of chemical, electrical and magnetic activities in billions of neurons and nerve paths in our brain. Thus the change in solar magnetic field and avalanche of solar charged and uncharged particles reaching us do affect our thinking process and behaviour, in many ways, and in turn, influence the events on the earth. By a consideration of the historical events of the world during the last three hundred years and by correlating them with the Sunspot activity, it has been found that there is a clear correspondence between the solar activity, and happenings on earth.

This appendix deals with the exclusive case history of Pakistan wherein we see astonishing correspondence between the political turmoil in this country and rise of solar activity in the heavens. We see that, in general, instability and public unrest in the country, has very much coincided with the periods of high Sunspot activity. A glance into the political history of Pakistan summarized in Table-X will be enough to prove this point.

In general, it is seen that Pakistan's political difficulties have been associated with the elections process in the country. There is a strange coincidence that most of the elections were held in the period of high solar activity and that also in the season of Spring and Autumn, when earth is in most favourable position to receive maximum magnetic radiations. Since electioneering itself is a politically charged period, therefore, if held in cosmically charged atmosphere, the adverse effects inadvertently multiply many times. This is exactly what has been happening in the case of Pakistan. From Table-X you will see that out of 58 turbulent major events, 44 happened in Spring and Autumn, and only 12 in other months of the year i.e. 80% in high magnetic seasons.



We may recall, with reference to the very recent history of Pakistan, of the period 1993-96, which most people should remember. Although in this period opposition parties made frequent attempts to agitate the public's mind, their appeals were not responded to by the people because, in those days, the sun was in a reasonably peaceful state and therefore, the people were bound to remain emotionally cool. In spite of the high prices heavy taxes, unsatisfactory law and order situation, and rising crimes rates, the people did not come out on the streets because the catalytic factors of the solar activity were then missing. However, by mid 1996-1997, solar activity started rising and we begin to see protest calls being responded with violence, resulting in the dissolution of the National Assembly and dismissal of the government of Benazir Bhutto.

Other events in the history of Pakistan, show similar co-relation, is in Table-X. It is a sad story, many bad episodes of which could have been avoided if the leaders of this country had taken the effects of Sunspots into their political calculations.

## **2. Glimpses of Future:**

Let us look at the immediate future of Pakistan. According to NASA predictions, the Sun is entering into one of history's most explosive phases. The mean maximum value is expected around 2000, and will be higher than ever recorded since 1750. Consequently, whole of the world will be abnormally turbulent; and likewise Pakistan will experience explosive jolts. If its leadership once again fails to stand up to the challenge of Sun, the country can suffer very badly. From the beginning of 1997 the clock has already started ticking. Confusion associated with violence since last year is a small reflection of the troubles ahead.

As the solar activity is on quick rise, so are the minds of the people, getting agitated without knowing it. Thus, in the coming years, protest calls would be responded with violence and political leadership would suffer emotional euphoria and jump into explosive situations for nothing. For example, Nuclear Tests by India and Pakistan could be attributed to the high Sunspot rising rate in 1998. Concurrently, with the fast rising streams of solar charged particles and bursts of magnetic radiations reaching earth are multiplying rapidly. Under their combined influence things on ground are most likely to become extremely volatile after September 1998 and if political leadership does not show foresight, these may result into explosive situation much before 2000. In this scenario, God forbid, the country can even see repetition of the events of 1977-80 and 1969-72.

Thus Pakistan along with the rest of the world is headed towards a crisis period of its history. This situation requires great caution, sobriety and statesmanship from the civil and military leadership of the country. Otherwise, things will easily slip out of their hands causing irreparable loss to their country.

Likewise the coming few years are going to be full of charged emotions agitated minds, aggressive attitudes and irrational turmoilful situation for the whole of the subcontinent and its neighboring countries. India will also have an un-parallel degree of political instability, separatists movements, terrorists activities, street violence, shortage of food, drought and floods. In the scenario of mounting internal troubles, Indian leadership will develop a very ugly mood and would start aggression against its neighboring countries. Serious armed clashes cannot be ruled out. The same may be the case of

countries like Iran, Afghanistan, Russia and China. The whole region will give a charged look, in which one can hardly expect peace anywhere.

It is, therefore, the requirement of time that the political leadership of this region must show constraint, and keep trying, to keep the atmosphere cool. Otherwise, the Indian subcontinent is bound to plunge into intense agitation, economic chaos, public unrest and military clashes, which by year 1999-2000 could reach uncontrollable magnitude of horrible consequences. The overflow of troubles from neighboring countries is likely to worsen the situation further. All can be said is that the predicted abnormally high Sunspots activity above 200, for cycle-23 is a timely warning. After having known that the coming decade, particularly the years between 1998-2003 are going to be too energetic and aggressive to control, it puts great responsibility on the leadership of every country to manage their affairs keeping their heads cool. Let us hope that the nations of the world, try to remain cool even under the agitational showers of severe magnetic energy and radiations of the Sun in these few years, so that they are able to avert the catastrophic situation and escape from the world War-III horrors. Pakistan, being in a fragile state, need to be more careful than any one else.

With this warning let us study the case history of Pakistan as summarized in able-6. For easy reference, events have been divided into three categories i.e. Spring, Autumn and rest of the year. It will be clear at a glance that high Sunspot years i.e. 1947-50, 1957-60, 1969-72, 1977-80, 1989-91, and high magnetic-months of Spring and Autumn always proved problem ridden times for this country. The point to over is that if our hypothesis is true for the past, why should we not learn a lesson for the future.

## **Conclusion:**

To conclude we may see that case history of events in Pakistan proves that almost 90% of the political happenings of long range concern and public unrest, agitation, political upheavals, turmoil, and had law and order situation did occur in Spring (Feb-March-April) or in Autumn (August-Sept-Oct.) Almost in 80% cases they correspond to the peak yearly Sunspot activity, when the earth receives maximum magnetic radiation. The seasonal effects proportionally multiply many times in the high sunspot years, which have been 1947-1949, 1957 - 1960, 1969 -1971, 1977-1980, 1987-1991. Peak years were 1947, 1958, 1969, 1979 and 1989. Next peak will be about 2000.

*This is a clear proof that activity in the sun has a direct bearing upon the people on earth, as if these have catalytic effect on the human behavior, giving rise to excessive mental, physical, emotional activity and aggression. If controlled, this state of mind can be put to good use, such as high productivity, creativity, invention and new ideas. But if it grows unchecked, it will result into large scale mass agitation, strikes, public frustration, anger and political unrest.*

The scientific reason for this is the effect of Sun on our brain activity, which is due to the electric signals running in billions of neuron cells comprising our brain. Intelligence response rate depends upon the ease with which brain neurons react and conduct these signals. A dull brain is supposed to be more resistive to inter flow of electrical pulses between its various components. The cosmic effects such as magnetic radiation, and charged particles effect the conductivity of the neurons of the brain.

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